

A Million Species ‘Threatened with Extinction’

The state of the world’s nature shows human-driven sixth mass extinction is ongoing.

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Nature is declining globally at rates unprecedented in human history – with grave impacts on people around the world, warns a landmark new report from the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), launched today in Paris.

The report, authored by 455 experts and reviewing over 15,000 scientific studies, assesses the global changes to the world’s biodiversity over the past five decades, providing a comprehensive picture of our relationship with, and impact on, nature.

The IPBES global biodiversity assessment can be seen as the the biodiversity equivalent of the climate change [1.5C report](#) that was launched by the UN Intergovernmental Panel on Climate Change (IPCC) in November last year.

Web of life

“The loss of species, ecosystems and genetic diversity is already a global and generational threat to human well-being. Protecting the invaluable contributions of nature to people will be the defining challenge of decades to come,” says **Sir Robert Watson**, who chairs IPBES.

Of the estimated 8 million animal and plant species on the planet, up to a million are threatened with extinction, many within a timespan of just decades, the report finds.

Around 10 percent of insect species are threatened with extinction, more than 30 percent of corals, sharks and marine mammals and more than 40 percent of amphibians. The average abundance of native species in most major land-based habitats has fallen by at least 20 percent since 1900.

The current rate of global species extinction is tens to hundreds times faster than the average over the last 10 million years. At least 680 vertebrate species have been driven to extinction since the 16th century and more than nine percent of all domesticated breeds of mammals we rely on for food and agriculture have gone extinct, with at least 1,000 more breeds still threatened.

“This loss is a direct result of human activity and constitutes a direct threat to human well-being in all regions of the world,” says **Professor Josef Settele**, who co-chaired the report. “The essential, interconnected web of life on Earth is getting smaller and increasingly frayed.”

Human drivers

There are many causes for the increasing loss of the world's biodiversity, but five stand out in terms of their relative impact on the living world.

These culprits are: changes in land and sea use; direct exploitation of organisms; climate change; pollution and invasive alien species. All these drivers interact with one another, often affecting species and ecosystems simultaneously.

1. Changes in land and sea use, driven by agricultural expansion and a steep rise in resource use, are the largest drivers of global biodiversity decline.

Three-quarters of the land-based environment has now been significantly altered by human actions, the report finds. A huge chunk of this, more than a third of the world's land surface, is now devoted to crop or livestock production. Agriculture now also uses nearly 75% of the world's freshwater resources.

We are also pushing our oceans to the brink. A third of marine fish stocks is being harvested at unsustainable levels; over half is being fished at the maximum allowed rate, and just 7% is harvested at levels lower than what can be sustainably fished.

The industrialisation of agriculture and overexploitation of land has caused land degradation and reduced the productivity of 23% of the global land surface. This has placed up to £425 billion (US\$ 577 billion) in annual global crops at risk of losing the necessary pollinators, threatening global food security.

2. Direct exploitation of organisms, mainly via harvesting, logging, hunting and fishing has also been a large direct driver of the decline in biodiversity. Today, humans extract more from the Earth and produce more waste than ever before. The increasing human population and growth in per capita gross domestic product were identified as driving this pressure, with ever-more distant consumers shifting the environmental burden of consumption and production across regions.

3. Climate change is already impacting nature from the level of ecosystems to that of genetics, with impacts expected to increase over the coming decades, and in some cases surpassing the impact of other drivers of biodiversity loss.

The distributions of almost half of land-based flightless mammals, for example, and almost a quarter of threatened birds, may already have been negatively affected by climate change.

An estimated 5% of species face increased extinction risks in 2°C warmer world, rising to 16% of species at 4.3°C of warming. Even for global warming of 1.5 to 2°C, the geographical ranges in which terrestrial species can thrive will have shrunk profoundly for almost all species.

4. Environmental pollution, in all its forms, is another strong driver of biodiversity loss. Plastic pollution, for example, has increased tenfold since 1980.

An estimated 300 to 400 million tons of heavy metals, solvents, toxic sludge and other wastes from industrial facilities are dumped annually into the world's waters, and fertilizers entering coastal ecosystems have produced more than 400 ocean 'dead zones', totalling

more than 245,000 km², a combined area greater than that of the United Kingdom.

5. Invasive species, moved across the globe via the air- and seaborne transportation of goods and people, have increasingly outcompeted and replaced native species, thereby upending local ecosystems. In certain countries, the number of invasive alien species has risen by about 70% since 1970.

On a broader scale, the results of this far-reaching biodiversity loss are undermining progress towards achieving the 2030 Sustainable Development Goals, having negative effects on the development goals related to poverty, hunger, health, water, cities, climate, oceans and land.

Loss of biodiversity is therefore not just an environmental issue, but also a developmental, economic, security, social and moral issue as well.

Transformative change

However bleak a picture the global biodiversity assessment paints, it also provides a wakeup call to the world's governments, all of which have formally agreed to the report's Summary for Policymakers, which was published by IPBES in Paris on May 6th.

In an effort to help decision makers deal with the threat of biodiversity decline, the authors of the report also examined six policy scenarios, very different future options of policy decisions, including a 'Business as Usual' scenario and a 'Global Sustainability' path, projecting the likely impacts on biodiversity and nature's contributions to people of these pathways by 2050.

They concluded that, except in scenarios that include transformative change, the negative trends in nature, ecosystem functions and in many of nature's contributions to people will continue long beyond 2050.

Examples of this necessary transformative change include adopting a cross-sectoral approach to conservation, one that integrates biodiversity considerations in global decision-making on any sector or challenge; as well as landscape planning; agricultural diversification; and rethinking the global financial and economic systems, away from growth and towards a sustainable economy.

Solutions

A number of conservation success stories during the past decade, although still few and to a limited scale, also offer hope, showing that with prompt and appropriate actions it is still possible to reduce human-induced extinction rates.

"Policies, efforts and actions – at every level – will only succeed, however, when based on the best knowledge and evidence. This is what the IPBES Global Assessment provides," says Sir Robert Watson.

"This essential report reminds each of us of the obvious truth: the present generations have the responsibility to bequeath to future generations a planet that is not irreversibly damaged by human activity," concluded **Audrey Azoulay**, Director-General of UNESCO.

"Our local, indigenous and scientific knowledge are proving that we have

solutions and so no more excuses: we must live on earth differently.”

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Arthur Wyns is a biologist and science journalist. He tweets from [@ArthurWyns](#). A summary of the IPBES global biodiversity assessment can be accessed [here](#).

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