



Biodiversity loss

There has been a massive loss of wildlife in the last 50 years, as habitats have been destroyed and exploitation of nature has been accelerated.

The number of animals on earth has halved since 1970, described by researchers as a “biological annihilation”. The Stockholm Resilience Centre, which defines biodiversity as a key planetary boundary, estimates we have [now crossed crucial thresholds](#). Symptoms of this ecosystem decline include deteriorating soil quality, species loss, shrinking fish stocks and deforestation. As ecosystems deteriorate, so too does their ability to provide the essential services that we rely on, thereby posing an existential threat to human civilisation. The severity of the current crisis is on a par with climate change, though climate change receives up to [eight times more attention](#) in the media. [“Without biodiversity, there is no future for humanity.”](#) says Prof David Macdonald, at Oxford University.

Biodiversity is the variety and complexity of life on earth. It has an immense intrinsic value, as well as providing the building blocks of ecosystems we depend on for essential goods and services that sustain both human and non-human life. As Damian Carrington writes, “A single spoonful of soil – which ultimately provides 90% of all food – contains 10,000 to 50,000 different types of bacteria”. Everything from the provision of food, fuel and fibre to climatic regulation and the purification of air and water depends on the ‘services’ of healthy, biodiverse ecosystems. Without these fully-functioning ecosystems, key industries such as agriculture, pharmaceuticals and even luxuries like cosmetics won’t survive for long. Nor will we.

Implications

Biodiversity loss has significant and wide-ranging implications for the future of humanity. It is both symptomatic of the breakdown of major human systems, and will contribute further to their breakdown. The implications are vast; these are merely some starting points:

For food and all crop-dependent sectors:

Biodiversity loss is an immediate and vital concern for subsistence farmers, who depend on diverse ecosystems for their livelihoods. The food system as a whole faces severe disruption, through impacts on soil health and pollinators, affecting yield, and the loss of crop resilience in the face of disease outbreaks. All sectors dependent on crops, including fashion and textiles, will be affected.

For business and regulators:

Business value is also undermined when ecosystem services that companies rely upon become degraded. The costs of raw materials can soar, hitting supply and profit margins. Businesses also risk their social and regulatory license to operate for their contribution to ecosystem crises and failure to act.

In future, campaign groups and regulators are likely to push harder for businesses to include biodiversity and ecosystems in their accounting practices, thereby changing investment decisions. Various methods for valuing biodiversity and ecosystems are emerging.

For governance and society:

Biodiversity loss also has implications for our enjoyment of the natural world and also for cultural heritage. Take, for instance, the Ohia forests of Hawaii, a keystone of Big Island's native ecosystem. Ohia trees can live for 600 years, but in 2016 faced a major plague referred to locally as 'tree Ebola'. The tree's name is traditionally used to designate strength, sanctity and beauty, and was used to build canoes, spears, homes, temples and towers, according to [Sam 'Ohu Gon, senior scientist and cultural advisor for the Nature Conservancy of Hawaii](#).

Governments, NGOs, businesses and societies around the world are also paying more attention to biodiversity, and working on the systemic restoration of degraded environments through innovative practices, such as regenerative agriculture.

Current trajectory

The global decline in biodiversity is reflected in the following ways:

Species loss

- [According to WWF](#), populations of vertebrate animals have decreased by 58% in the past fifty years, driven largely by habitat loss.
- A study in Germany found that the country's [insect population has declined by 75% since 1990](#), posing a serious threat to pollination.
- [A paper published by the Proceedings of the National Academy of Sciences USA](#) describes the current trajectory as a "biological annihilation", and "the Earth's ongoing sixth major extinction event". Extinction is occurring at a rate up to 1000 times the prevailing rates over the past 2 million years.

Soil degradation

- Globally, [40% of the soil](#) used for agriculture is degraded.
- Every year, [approximately 24 billion tons of fertile soil is lost](#), far greater than the average rate of replenishment.
- [The loss of fertile soil is already affecting agricultural productivity](#), presenting a challenge in the face of increasing food demand.

Threats to carbon sinks

- [3.3 million hectares of the world's forests are lost annually](#), limiting their ability to sequester carbon.
- Loss of the world's topsoil also has worrying implications, given it [contains three times the amount of carbon as the entire atmosphere](#).

Loss of fish stocks

- Estimates say that 31.4% of global fish stocks are at [biologically unsustainable levels](#).
- Coral habitats that act as havens for biodiversity are also under threat. Currently, [27% of the world's coral reefs have been lost](#). The [2018 IPCC Special Report](#) said that coral reefs are projected to decline by a further 70-90% at 1.5°C warming (*high confidence*), with larger losses (>99%) at 2°C (*very high confidence*).