DEFORESTATION AND BIO-DIVERSITY LOSS

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Deforestation is the permanent removal of trees to make room for something besides forest. This can include clearing the land for agriculture or grazing, or using the timber for fuel, construction or manufacturing. Forests cover more than 30% of the Earth's land surface, according to the World Wildlife Fund. These forested areas can provide food, medicine and fuel for more than a billion people. Worldwide, forests provide 13.4 million people with jobs in the forest sector, and another 41 million people have jobs related to forests.

The World Bank estimates that about 3.9 million square miles (10 million square km) of forest have been lost since the beginning of the 20th century. In the past 25 years, forests shrank by 502,000 square miles (1.3 million square km) — an area bigger than the size of South Africa.

Often, deforestation occurs when forested area is cut and cleared to make way for agriculture or grazing. Natural fires in tropical forests tend to be rare but intense. Human-lit fires are commonly used to clear land for agricultural use. First, valuable timber is harvested, then the remaining vegetation is burned to make way for crops like soy or cattle grazing. In 2019, the number of human-lit fires in Brazil skyrocketed. As of August 2019, more than 80,000 fires burned in the Amazon, an increase of almost 80% from 2018, National Geographic reported. Many forests are cleared to make way for palm oil plantations. Palm oil is the most commonly produced vegetable oil and is found in half of all supermarket products. It's cheap, versatile and can be added to both food and personal products like lipsticks and shampoo. Its popularity has spurred people to clear tropical forests to grow more palm trees. Growing the trees that produce the oil requires the leveling of native forest and the destruction of local peatlands — which doubles the harmful effect on the ecosystem.

Deforestation in tropical regions can also affect the way water vapor is produced over the canopy, which causes reduced rainfall. A 2019 study published in the journal Ecohydrology showed that parts of the Amazon rainforest that were converted to agricultural land had higher soil and air temperatures, which can exacerbate drought conditions. In comparison, forested land had rates of evapotranspiration that were about three times higher, adding more water vapor to the air.

Trees also absorb carbon dioxide, mitigating greenhouse gas emissions produced by human activity. As climate change continues, trees play an important role in carbon sequestration, or the capture and storage of excess carbon dioxide. Tropical trees alone are estimated to provide about 23% of the climate mitigation that's needed to offset climate change, according to the World Resources Institute, a non-profit global research institute.

Deforestation not only removes vegetation that is important for removing carbon dioxide from the air, but the act of clearing the forests also produces greenhouse gas emissions. The Food and Agriculture Organization of the United Nations says that deforestation is the second-leading cause of climate change. (The first is the burning of fossil fuels.) In fact, deforestation accounts for nearly 20% of greenhouse gas emissions.

While the loss of forests is clearly visible, a decline in biodiversity has a less apparent effect. The subtle loss of biodiversity fails to indicate the significance that fewer species in the ecosystem increases the fragility of life for all species. Deforestation can directly lead to biodiversity loss when animal species that live in the trees no longer have their habitat, cannot relocate, and therefore become extinct. Deforestation can lead certain tree species to permanently disappear, which affects biodiversity of plant species in an environment.

The loss of forests and the loss of biodiversity are almost one and the same thing as forests contain 60 per cent of the world's extraordinarily rich selection of flora and fauna. They also play a vital role in climate regulation and are an important sink for carbon.

Deforestation results from the removal of trees without sufficient replacement, which leads to a reduction in habitat, biodiversity as well as wood and quality of life. (FAO, 2011) defines deforestation as the long-term reduction of the tree canopy cover below the minimum 10 percent threshold. (UNFCCC,2006) description has a different threshold, in which deforestation is defined as a measurable sustained decreased in crown cover from greater than 10-30 percent to less than 10- 30 percent.
Over 80% of the world's terrestrial biodiversity can be found in forests - from pine trees in the boreal North to the rainforests in the tropics. The degradation and loss of forests threaten the survival of many species, and reduce the ability of forests to provide essential services such as clean air and water, healthy soils for agriculture, and climate regulation.

Biodiversity, the diversity of life on Earth, is essential to the healthy functioning of ecosystems. Habitat loss and overexploitation, driven by our rapid population growth, are the primary causes of biodiversity loss which is now happening up to ten thousand times faster than for millions of years before.

Healthy ecosystems, interdependent webs of living organisms and their physical environment, are vital to all life on Earth. Our ecosystems provide us with clean air, fresh water, food, resources and medicine. Throughout Earth's history, healthy ecosystems have usually been resilient enough to adapt to gradual environmental change.

Biodiversity, the variation of life on Earth, is a major factor in its resilience. In a biodiverse ecosystem, if the environment changes and some organisms can no longer thrive, others can take their place and fulfill essential functions. It is often the most overlooked species that are the most important to healthy ecosystems. Insects, for example, play an essential role in pollinating flowering plants — a third of the food we eat depends on animal pollinators.

THE SIXTH MASS EXTINCTION

Since life appeared on Earth, there have been several mass extinctions in which many species were wiped out because of climate change, volcanic activity, the impact of an asteroid or reasons we have not yet discovered.

The plants and animals which currently live on Earth have continued to evolve over the 65 million years since the last mass extinction. But many scientists consider the huge reduction in biodiversity since the emergence of humans is now on the scale of another mass extinction. This is known as the Anthropocene extinction or sixth mass extinction.

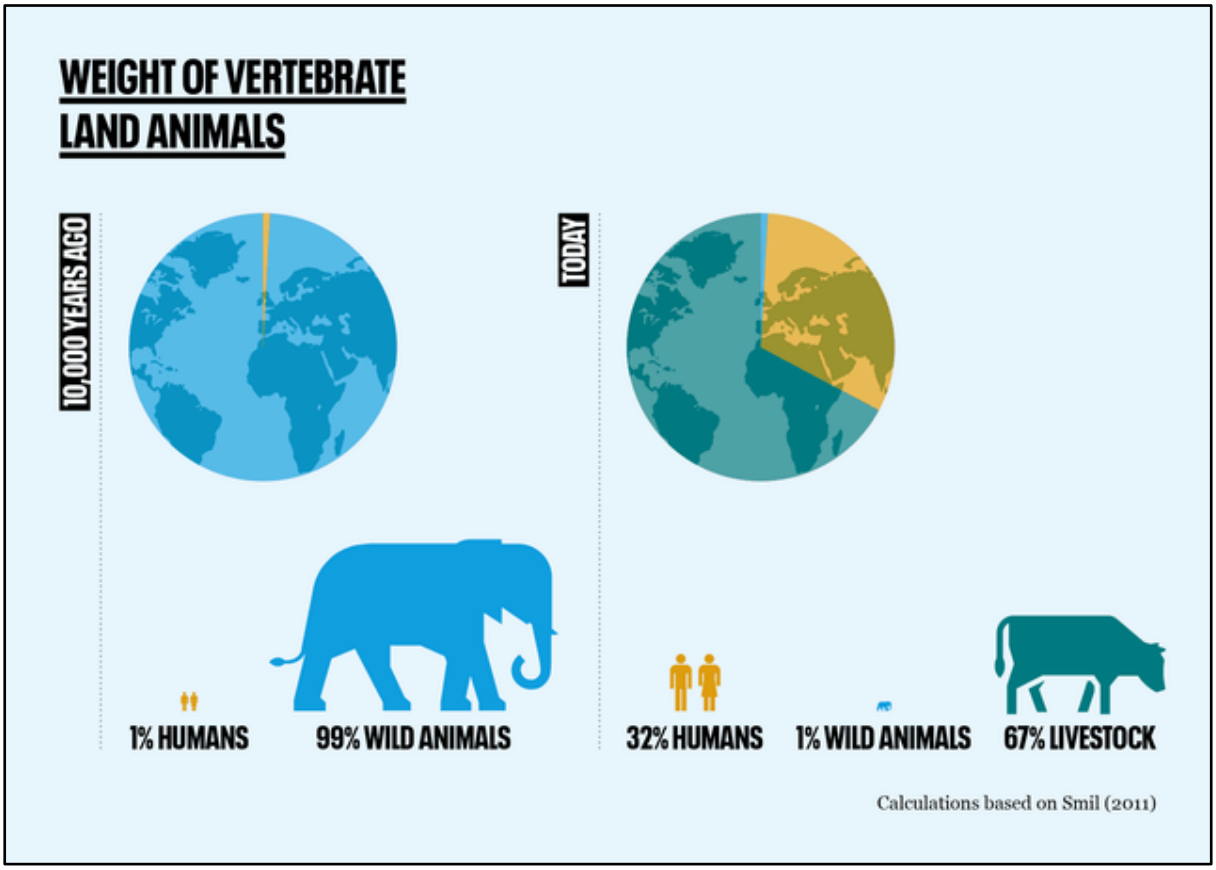
WWF's latest Living Planet Report estimates that we have lost 60% of all vertebrate wildlife populations since 1970. That's more than half of all birds, mammals, reptiles, amphibians and fish gone in just 50 years. During that time, our population has more than doubled, increasing

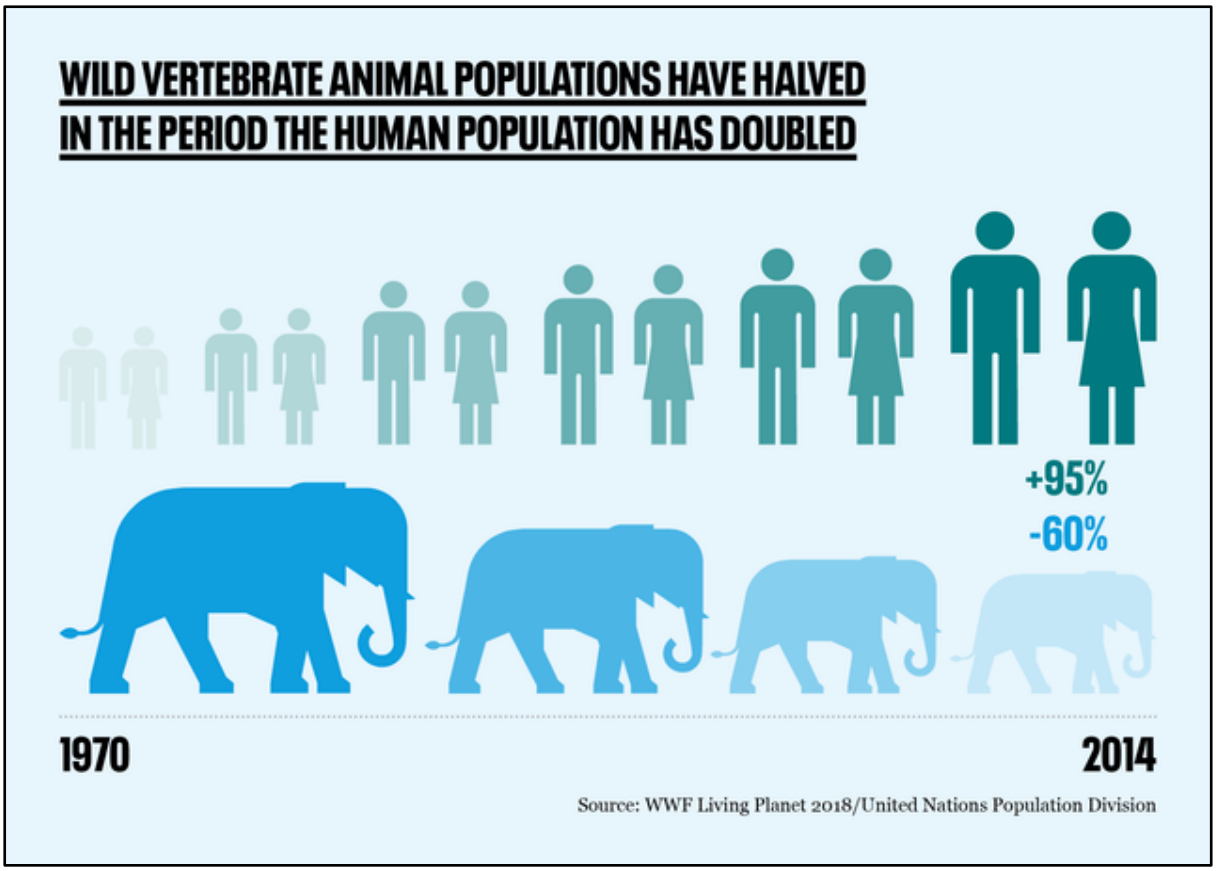
from 3.7 billion to over 7.7 billion today. Invertebrates, while understudied, aren't faring any better. A German study found that flying insect populations (including pollinators) have crashed by three-quarters since 1989, reflecting similar trends around the world.

In its landmark 2019 report, IPBES reported that one million species are now at risk of extinction and according to the IUCN Red List of Threatened Species, 41% of amphibians, 25% of mammals, 34% of conifers, 13% of birds, 31% of sharks and rays, 33% of reef-building corals, and 27% of crustaceans are threatened with extinction.

Some countries are worse off than others. The 2016 State of Nature report concluded that the United Kingdom was one of the most nature-depleted countries in the world.

Biodiversity loss is attributable to several causes but by far the biggest culprits are habitat destruction and overexploitation of species, driven by our exploding numbers and unsustainable consumption.





CAUSES OF BIO-DIVERSITY LOSS

HABITAT DESTRUCTION

Ever more people need ever more space. Damaging human activity continues to encroach on natural environments, thereby destroying the habitats of countless species. As our numbers rise, cities and industrial areas are growing and merging into each other, fragmenting the remaining habitat and leaving isolated "islands" of natural populations of plants and animals too small to survive. According to IPBES (Intergovernmental Science Policy platform on Biodiversity and Ecosystem Services), only one quarter of land areas and one third of oceans remain relatively undamaged by human activity.

OVEREXPLOITATION

Ever more people need ever more things. Humankind's relentless consumption of resources such as timber, oil and minerals is continuing to destroy natural habitats around the globe. We are also putting enormous pressure on populations of wild species, both by bushmeat hunting in the developing world and by large-scale industrial fishing in our seas. Wildlife poaching and trafficking still present a huge threat to many species, including rhinos, tigers and pangolins.

AGRICULTURAL INTENSIFICATION

Ever more people need ever more food. In order to meet the unsustainable consumption patterns of the developed world and feed the numbers of people living on the Earth today, humanity has developed agricultural systems which rely on monocultures, artificial fertilisers and pesticides. Monocultures are increasingly susceptible to disease whilst widespread pesticide use destroys insect populations indiscriminately. In addition, the growing pressure on food supplies means an increasing proportion of agricultural land is farmed intensively, with fewer off seasons or fallow years in which to recover. Currently, livestock farming contributes to more climate emissions than the entire transport sector and is

the biggest cause of deforestation. Runoff from farms pollutes water bodies and causes harmful algal blooms and the collapse of fish stocks.

CLIMATE CHANGE

Ever more people produce ever more climate emissions. Our planet is on the verge of a climate crisis due to our endless production of greenhouse gases including carbon dioxide and methane. We are headed for a 3°C warmer world by the end of the century if we do not step up action on climate change. We are already seeing species decline due to global temperature increase. Every half a degree of warming has a huge knock-on effect on ecosystems, with mobile species running out of areas to migrate to and temperature-sensitive organisms like corals undergoing massive die-offs. When keystone species like reef-building corals disappear, the rich and complex ecosystems they support collapse as well.

POLLUTION

Ever more people produce ever more waste and pollution. Our oceans are becoming choked with plastic waste which is killing millions of animals, from sea turtles to whales. The Ellen MacArthur Foundation estimates that by 2050, there will be more plastic than fish in the sea. As populations increase, the disposal of waste, in particular hazardous waste, becomes an increasingly serious issue. As well as affecting the lives of humans, noise, light and chemical pollution can disrupt wildlife behaviour. Light from human activities makes it harder for predator species to catch their prey. Noise pollution interrupts both hunting and mating signals in many species, disturbing natural behaviour.

INVASIVE SPECIES

Ever more people mean ever more travel. Human travel across the world has a very large emissions footprint but it has also allowed the spread of invasive species, both accidental and intentional. As a consequence of the introduction of non-native species to some areas, such as rabbits and cats in Australia, goats on St. Helena, and American mink in Great Britain, we have put many vulnerable ecosystems at risk, threatening native species and diminishing biodiversity.

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