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ZSL
LET'S WORK FOR WILDLIFE

LIVING PLANET REPORT 2020

BENDING THE CURVE OF BIODIVERSITY LOSS

Threats to biodiversity

Changes in land and sea use, including habitat loss and degradation

This refers to the modification of the environment where a species lives, by complete removal, fragmentation or reduction in quality of key habitat. Common changes in use are caused by unsustainable agriculture, logging, transportation, residential or commercial development, energy production and mining. For freshwater habitats, fragmentation of rivers and streams and abstraction of water are common threats.

Species overexploitation

There are both direct and indirect forms of overexploitation. Direct overexploitation refers to unsustainable hunting and poaching or harvesting, whether for subsistence or for trade. Indirect overexploitation occurs when non-target species are killed unintentionally, for example as bycatch in fisheries.

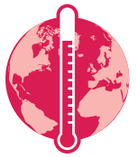
Invasive species and disease

Invasive species can compete with native species for space, food and other resources, can turn out to be a predator for native species, or spread diseases that were not previously present in the environment. Humans also transport new diseases from one area of the globe to another.

Pollution

Pollution can directly affect a species by making the environment unsuitable for its survival (this is what happens, for example, in the case of an oil spill). It can also affect a species indirectly, by affecting food availability or reproductive performance, thus reducing population numbers over time.

Climate change

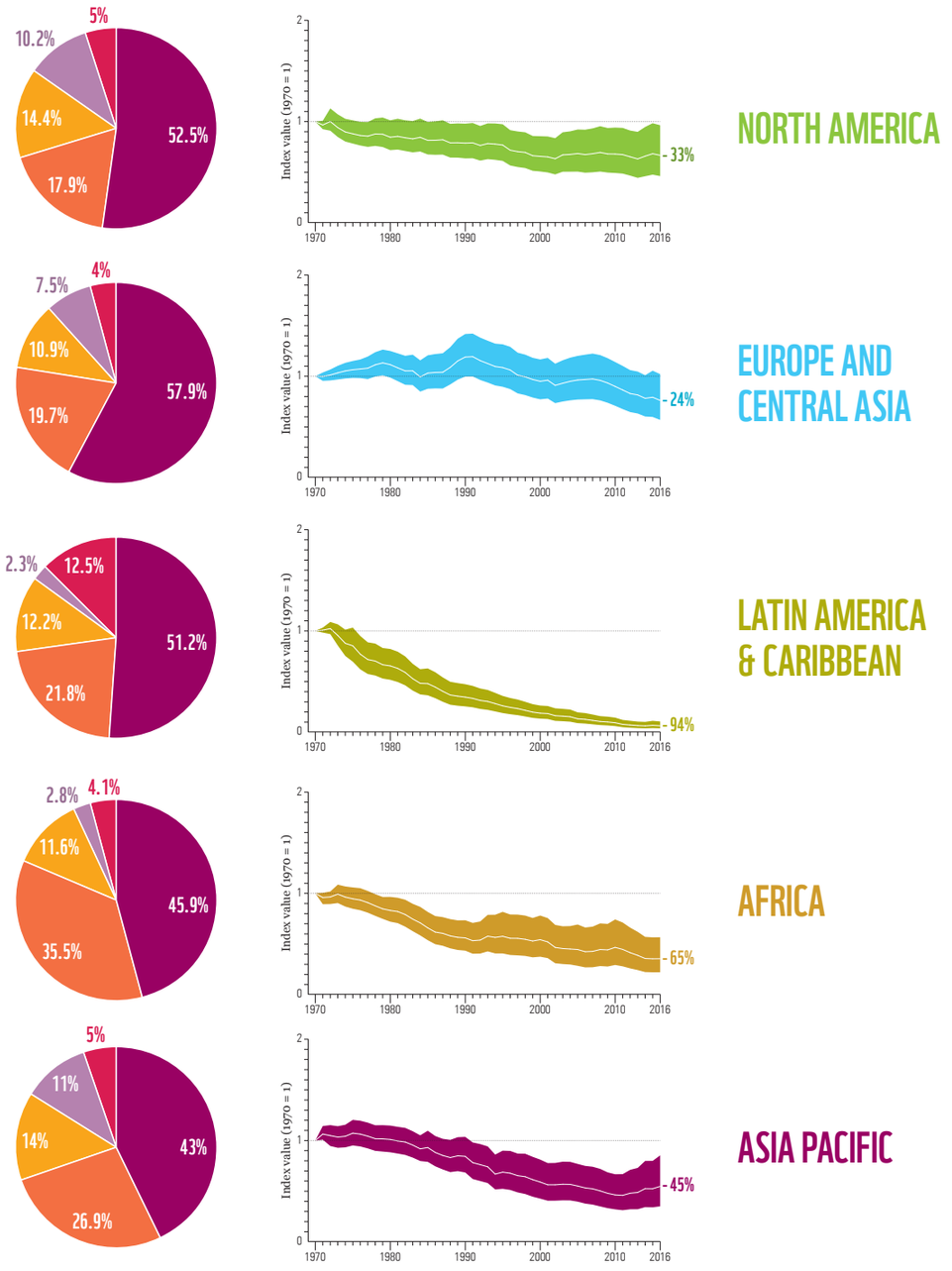


As temperatures change, some species will need to adapt by shifting their range to track a suitable climate. The effects of climate change on species are often indirect. Changes in temperature can confound the signals that trigger seasonal events such as migration and reproduction, causing these events to happen at the wrong time (for example misaligning reproduction and the period of greater food availability in a specific habitat).

Figure 4: Different threat types in the Living Planet Database
Descriptions of the major threat categories used in the Living Planet Database. This classification reflects the direct drivers with the largest global impact as identified by IPBES[1]; it is also followed by the IUCN Red List and is based on the original classification by Salafsky, N. et al. (2010)[10]. Source WWF/ZSL (2020)[107].

Figure 5: The proportion of threats recorded in each category for populations in each IPBES region[9]
The number of populations with threat data available is shown next to the pie chart[107]. The colour of each section refers to the colour for each threat category on the opposite page.

Regional threats to populations in the LPI



BIODIVERSITY IS FUNDAMENTAL TO FOOD SECURITY

Urgent action is needed to address the loss of the biodiversity that feeds the world.

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(Food and Agriculture Organization of the United Nations FAO)

Food security is considered to exist "when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" [62]. With the number of undernourished people in the world at about 820 million, and increasing in recent years, and more than 2 billion people estimated not to have regular access to safe, nutritious and sufficient food [63], global food security is far from being achieved. Major changes are needed if Sustainable Development Goal 2: Zero Hunger (targeting the end of hunger and all forms of malnutrition by 2030) is to be met. Better management of biodiversity has an important role to play in this.

FAO's global assessment of biodiversity for food and agriculture [64], on which this section draws, provides an analysis of the multiple ways in which biodiversity contributes to food security (see Figure 23 overleaf). Thousands of species of wild and domesticated plants, animals, fungi and micro-organisms are consumed as food. Among domesticated species, thousands of different plant varieties, livestock breeds and aquaculture strains have been developed. All this diversity adds to the options available to food producers and increases the range of foods available. It allows food to be produced in a wide variety of environments and helps provide people with diverse and balanced diets. Millions of livelihoods are supported by the farming or harvesting of a wide variety of food, feed, fuel and fibre-producing species.

Beyond the species that we eat, a vast range of others – as well as whole ecosystems – are essential to food production. These include the pollinators that enable many important crop species to reproduce, the natural enemies that protect crops from pests and reduce the need for harmful pesticides, the micro-organisms and invertebrates that enrich soils, the grassland ecosystems that provide food for livestock, and the mangroves, coral reefs and seagrass beds that provide habitats for fish.

Many ecosystems contribute in multiple ways to providing the conditions needed for food production, for example by regulating water flows or providing protection against storms.

Biodiversity – at genetic, species and ecosystem levels – makes production systems and livelihoods better able to withstand shocks and respond to environmental, social and economic changes. Genetic diversity allows populations to adapt over time via natural selection. In the case of domesticated species, it provides the basis for breeding programmes aimed at increasing production or improving the capacity of crops, trees, livestock or farmed aquatic organisms to cope with challenges such as high temperatures or the presence of diseases or parasites.

The potential benefits of biodiversity for food security are far from being fully realised. Species that are richer in micronutrients and vitamins, or better adapted to local conditions, are often underused. Among plants for example, only nine species (sugar cane, maize, rice, wheat, potatoes, soybeans, cassava, sugar beet and oil palm) account for 67% of all crop production [65]. There are also many ways in which the indirect contributions of biodiversity to food security could be increased, for example by protecting soils, or providing habitats for pollinators or the natural enemies of pests, in and around production systems.

Many species and ecosystems of importance to food and agriculture are in decline, and genetic diversity within species is often decreasing. Major threats include destructive changes in land and water use and management, including in the food and agricultural sector, climate change, and the overexploitation of wild species used for food. Reversing these negative trends and addressing these threats will be essential to the future of global food security.

In 2019, FAO launched the first report on **The State of the World's Biodiversity for Food and Agriculture** [64]. Five years in the making, the report was prepared under the guidance of FAO's Commission on Genetic Resources for Food and Agriculture through a participatory, country-driven process, engaging over 175 authors and reviewers, who based their analysis on 91 country reports prepared by over 1,300 contributors. It details the many benefits that biodiversity brings to food and agriculture, examines how farmers, pastoralists, forest dwellers, fishers and fish farmers have shaped and managed biodiversity, identifies major drivers of trends in the status of biodiversity, and discusses trends in the use of biodiversity-friendly production practices.

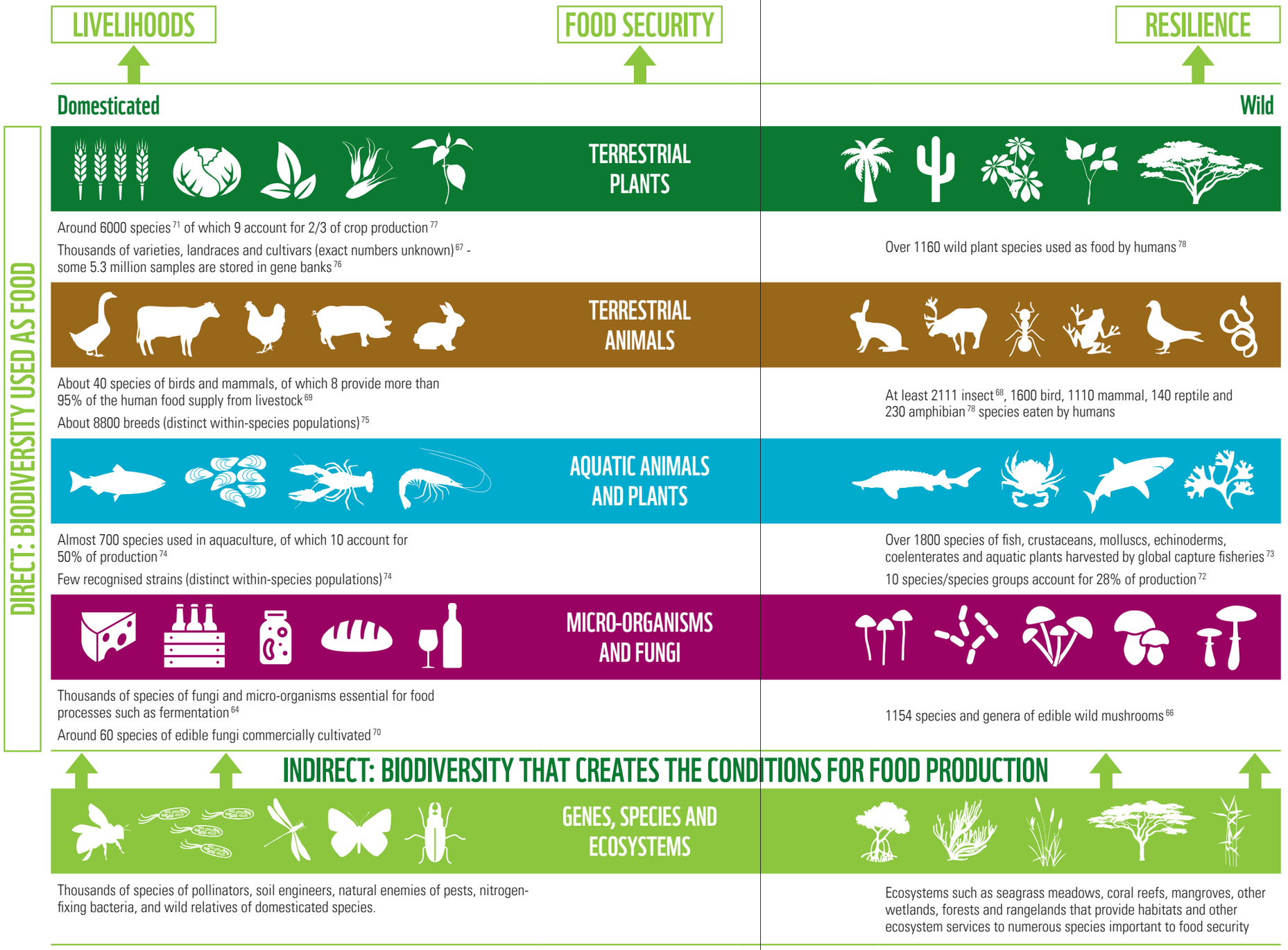

Figure 23: Key direct and indirect contributions of biodiversity to food security
Information for this figure was drawn from a number of sources[66 - 73, 64, 74-78].