

Living Planet Index

- **Brief Explanation about the Index:**

The Living Planet Index (LPI) is a gauge of the condition of biological diversity on a global scale based on changes in worldwide vertebrate species' populations. It accomplishes this in a manner similar to how a stock market index monitors the value of a group of shares or how a retail pricing index monitors the price of a selection of consumer items.

The Living Planet Database (LPD) now has time-series data for over 27,000 populations of over 4,300 mammal, bird, fish, reptile, and amphibian species from all over the world. These data were acquired from a range of sources, including journals, internet databases, and government publications. These species population patterns are combined to create indices of the condition of biodiversity using a technique created by ZSL and WWF. The remainder of the study focuses on broadening the breadth of LPI data to more accurately reflect global vertebrate biodiversity and on breaking down the index to measure changes in several theme areas. This involves evaluating the shifts in various taxonomic groupings, examining species trends on a national or regional basis, determining how various stressors impact populations, and offering insight into how conservation intervention might enhance species recoveries.

- **Policy of Information:**

The Convention on Biological Diversity's (CBD) 2010 aim to slow the pace of biodiversity loss was not realized, according to a set of 2010 biodiversity indicators, and the LPI was crucial in tracking progress toward that goal. The 2020 goals are centered on preserving ecological services, where biodiversity is crucial. Many of the Aichi Biodiversity goals under Strategic Goals A–D, which address the sources, stresses, state, and benefits of biodiversity, may be measured using the Living Planet Index (LPI).

- **How to calculate the Index:**

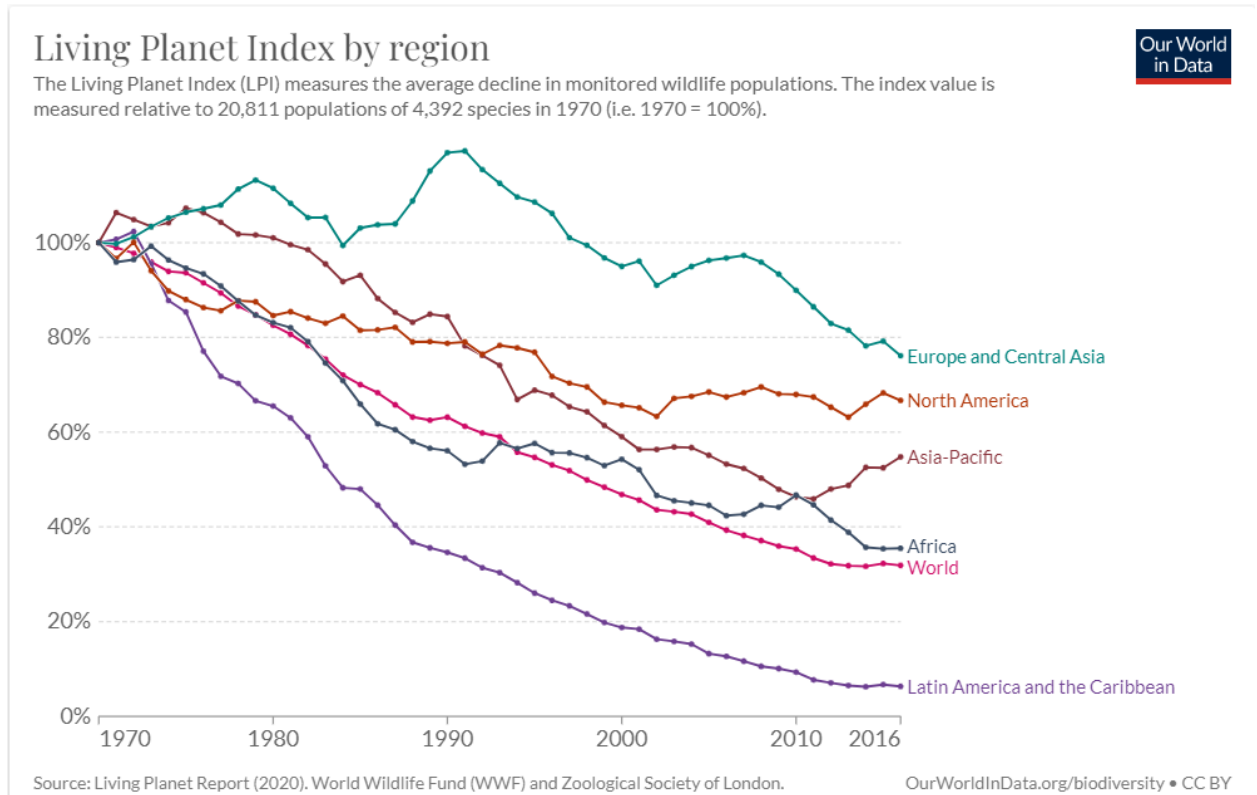
To compute an LPI, a generalized additive modelling framework is employed to establish the underlying trend in each population time-series (Collen et al. 2009; Loh et al. 2005). After that, the average rates of change are determined and aggregated to the species level. The technique of aggregation for the global LPI was recently altered to incorporate a weighting scheme that provides trends from more species-rich systems, realms, and groupings more weight in the final index (McRae et al. 2017).

- **Global Trend:**

According to the worldwide LPI given in the Living Planet Report 2020 (Figure 1), a subset of 20,811 populations of 4,392 species decreased in abundance by an average of 68% between 1970 and 2016. According to the findings of the Living Planet Report

2020, species are doing substantially worse in freshwater ecosystems and in tropical areas. In contrast to the IPBES regions, freshwater populations decreased by an average of 84%, with the largest decreases occurring in Latin America & the Caribbean and Africa (94% and 65%, respectively).

- **Living Planet Index by Region:**



[1]

			Living Planet Index (1970 = 100%)	
Country	1970	2016	Absolute Change	Relative Change
Africa	100.00%	35.47%	-64.53 pp	-65%
Asia-Pacific	100.00%	54.76%	-45.24 pp	-45%
Europe and Central Asia	100.00%	76.13%	-23.87 pp	-24%
Freshwater	100.00%	15.51%	-84.49 pp	-84%
Latin America and the Caribbean	100.00%	6.33%	-93.67 pp	-94%
North America	100.00%	66.71%	-33.29 pp	-33%
Reptiles	100.00%	69.02%	-30.98 pp	-31%
World	100.00%	31.86%	-68.14 pp	-68%

- According to the Living Planet Index, since 1970 there has been an average drop of 68% in examined animal populations:

			Living Planet Index				
			(1970=100%)				
Region /group	1970	2016	Absolute Change		Relative Change	1970	2016
Africa	100.00%	35.47%		-64.53pp	-65%	100.00%	56.68%
Asia -Pacific	100.00%	54.76%		-45.24pp	-45%	100.00%	85.36%
Europe and Cen	100.00%	76.13%		-23.87pp	-24%	100.00%	102.10%
Freshwater	100.00%	15.51%		-84.49pp	-84%	100.00%	22.52%
Latin							
America and the	100.00%	6.33%		-93.67pp	-94%	100.00%	10.57%
Caribbean							
North America	100.00%	66.71%		-33.29pp	-33%	100.00%	96.41%
Reptiles	100.00%	69.02%		-30.98pp	-31%	100.00%	119.40%
World	100.00%	31.86%		-68.14pp	-68%	100.00%	38.13%

It reveals that between 1970 and 2016, animal populations under study experienced an average decline of 68%. LPI examined 20,811 populations from 4,392 different species in its most recent study. It only addresses species of vertebrates, including mammals, birds, fish, reptiles, and amphibians. Although it has a sizable number of people from every continent, the tropics are frequently underrepresented in comparison to Europe and North America. Given that the tropics are where wildlife is most in danger and where there is the largest variety of species, this is not ideal. This discloses two further restrictions. It only includes a small subset of species: bird species(15%), mammals(12%), fish species(5%), amphibian species(4%), reptile species(2%). First It's challenging to determine how representative the data is because, frequently, the species that cause us the most concern (and rightfully so) receive the most scientific attention. Second, a lot of taxonomic groups, such as coral, plants, fungi are completely absent from the study. LPI reports that, among the 20,811 populations it investigated, the population size decreased by 68% on average between 1970 and 2016. The number of extinctions that have taken place, the number of species that have been lost, or even the proportion of declining species are not disclosed by LPI.

- **What do we mean by “average decline”?**

	Black rhino (Tanzania)	Black rhino (Botswana)	Total (Tanzanian and Botswananian black rhinos)
Population size in 1980	3795	30	3825
Population size in 2017	160	50	210
Number of animals lost since 1980	3635	-20 (gained 20 rhinos)	3615
Percentage change in population size	-96%	+67%	-95%

The average variation in animal population size worldwide is tracked by the Living Planet Index (LPI). Species within a certain geographic region are referred to as "populations." This means that even though they are members of the same species, the populations of African elephants in Tanzania and South Africa are distinct. Two Black rhino populations—one in Tanzania and one in Botswana—will serve as our concrete examples. There had been 3795 rhinos in Tanzania and just 30 in Botswana in 1980, according to the first row on the table, which shows their population size. The population of rhinos in Tanzania has been severely depleted by decades of widespread poaching, as shown in the second row, where there were just 160 rhinos left in 2017. Botswana's situation really got better over time; there are now 50 rhinos there instead of just 30. The third row displays the variation in population size between 1980 and 2017; this shows the quantity of animals that have perished over time. Additionally, we can observe the % change in population size for each in the final row. By losing 96% of their population, the Tanzanian rhinos clearly did not fare well. The team from Botswana fared significantly better since their numbers really rose by 67%.

- **Miscellaneous:**

In order to analyze trends at various scales and for various habitats, the population time-series data in the LPI are supplemented by extra data pertaining to the population's taxonomy, location, and ecology. The worldwide trend depicted above can be further broken down in this manner to highlight trends in temperate and tropical regions as well as various systems or biogeographic domains.

- **References:**

[1] <https://ourworldindata.org/living-planet-index#what-does-the-lpi-show>