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A DEEP DIVE INTO THE LIVING PLANET INDEX 2026

A technical report

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1. THE LIVING PLANET INDEX

1.1 What is the Living Planet Index?

To be able to protect nature, we need to understand environmental change over time and in different places. The Living Planet Index (LPI), currently produced by ZSL (Zoological Society of London), was developed in 1997 as an indicator to measure one aspect of the changing state of the world's biological diversity: the patterns of increase, decrease and stability in wildlife population abundance. The indicator captures changes in the number of individual animals of the same species consistently monitored in a specific area over a period of time, which for the purposes of the LPI is a "population".

The LPI tracks trends in the sizes of a large number of populations of vertebrate species in much the same way that a stock market index tracks the value of a set of shares, or a retail price index tracks the cost of a basket of consumer goods. Because population-level extinction is the prelude to species-level extinction, the LPI can thus act as an early warning indicator of the potential loss of ecosystem function and resilience, and of increasing extinction risk. The methodology for calculating this indicator has been peer-reviewed, has remained consistent for almost a decade, and is open-source and transparent (Freeman *et al.*, 2017; McRae *et al.*, 2017).

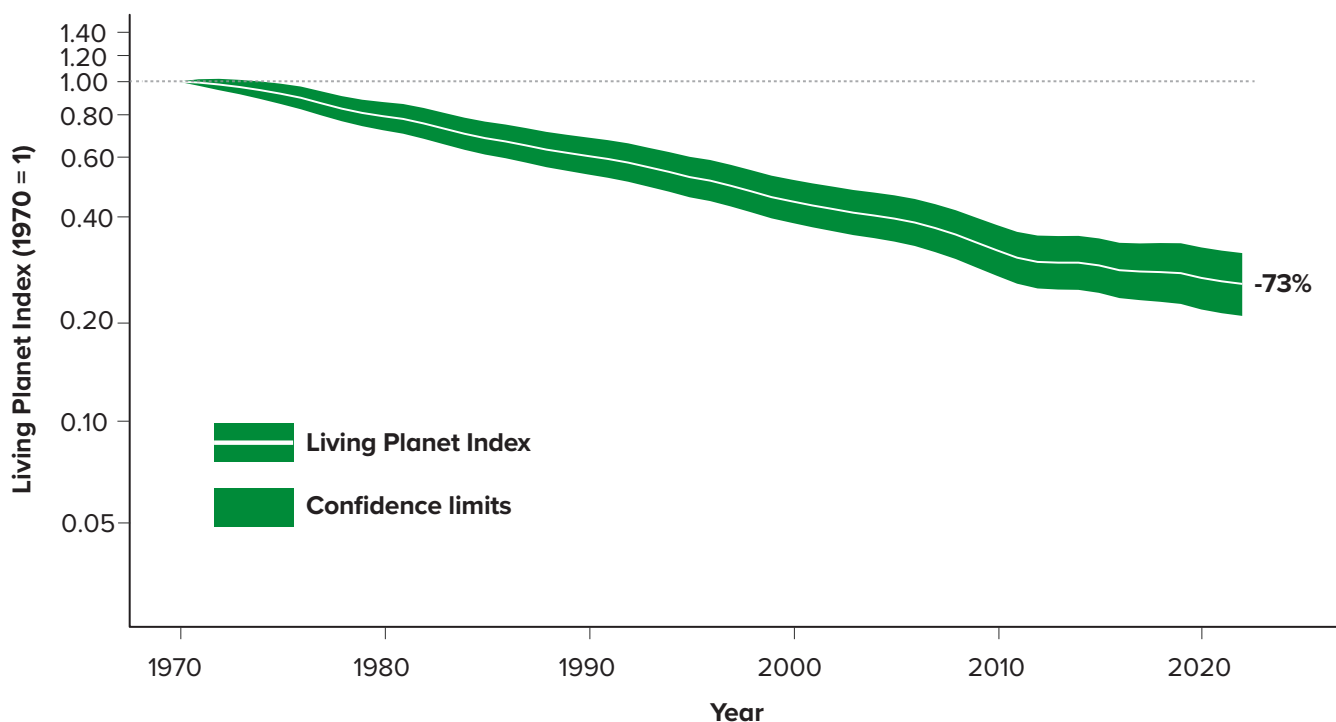


Figure 1. The global Living Planet Index from 1970 to 2022 based on 35,803 monitored populations of 5,790 vertebrate species. The white line represents the smoothed index values, and the shaded areas represent the uncertainty around them. [Section 1.2.1](#) describes how to interpret this graph.

1.1.1 What data go into the Living Planet Index

The dataset behind the LPI is stored in the Living Planet Database (LPD, www.livingplanetindex.org). The LPD is continuously updated and augmented. This information is used to calculate LPIs at different scales, the results of which are published every two years in WWF's Living Planet Report (LPR), along with the updated LPD. At each LPR the most up-to-date available dataset is used for analysis. The LPI team, based at ZSL's Institute of Zoology, is responsible for both the curation of the LPD and the calculation of the trends presented in the LPR.

The dataset behind the 2026 LPI trends has been collated from more than 3,500 individual data sources such as published scientific literature, online databases and grey literature. The data collected comprise a variety of different measures that quantify changes in population size over time. In addition to direct counts of individuals, density measures (population size per unit area) or proxies of abundance (e.g. the number of nests or breeding pairs) can also be used in the LPI.

1.1.2 The LPI trends

The trends presented in the LPR 2026 (WWF, 2026) are based on time-series data for 35,803 populations of 5,790 species of mammals, birds, reptiles, amphibians and fish from around the globe considered native in the location where they were monitored. This includes 5,649 time-series that were provided to the LPI team under the agreement that they would be kept confidential.

Using a method developed by ZSL and WWF (Loh *et al.*, 2005; Collen *et al.*, 2009; McRae *et al.*, 2017), the species population trends in the LPD are aggregated and weighted to produce the different Living Planet Indices, focusing not just on the global trend but also on change in different systems or regions of the world (see [section 3](#)). The global LPI for 1970 to 2022 from the LPR 2026 is shown in [Figure 1](#). In addition, the LPI can be used to describe trends in different countries when sufficient data are available (see, for example, the [Canadian Species Index](#)) or along different themes, e.g. the Forest Specialist Index (Green *et al.*, 2020). Trends can be further examined in relation to body size, habitat and environmental variables or threats (Spooner *et al.*, 2018; Green *et al.*, 2020; Cornford *et al.*, 2023) and conservation actions (Craigie *et al.*, 2010; Barnes *et al.*, 2016; Costelloe *et al.*, 2016; Ledger *et al.*, 2022).

Developing biodiversity indicators is challenging primarily because biodiversity isn't monitored systematically. There are many gaps in data and availability varies considerably across species groups, regions and over time. As such, there is no perfect indicator and all need strategies to overcome gaps and bias in data. The LPI is no different, and the methods have been developed to make the best use of the species data that are available. Given current trends in biodiversity, there simply isn't time to wait for a systematic global monitoring programme to be developed. Instead, indicator results are presented alongside a summary of the data used, how representative the dataset is of global biodiversity, and any other limitations to the index.

1.2 Interpretation of the LPI

1.2.1 The basics

Living Planet Indices – whether the global index or those for a specific realm or species group – show the cumulative average rate of change over time across a set of species populations. Although the resulting figures appear very simple, their interpretation requires the understanding of certain important terms, as depicted in [Figure 2](#). [Section 4.1](#) explains why index values change between different editions of the LPR, and why subsequent versions are not directly comparable.

Baseline

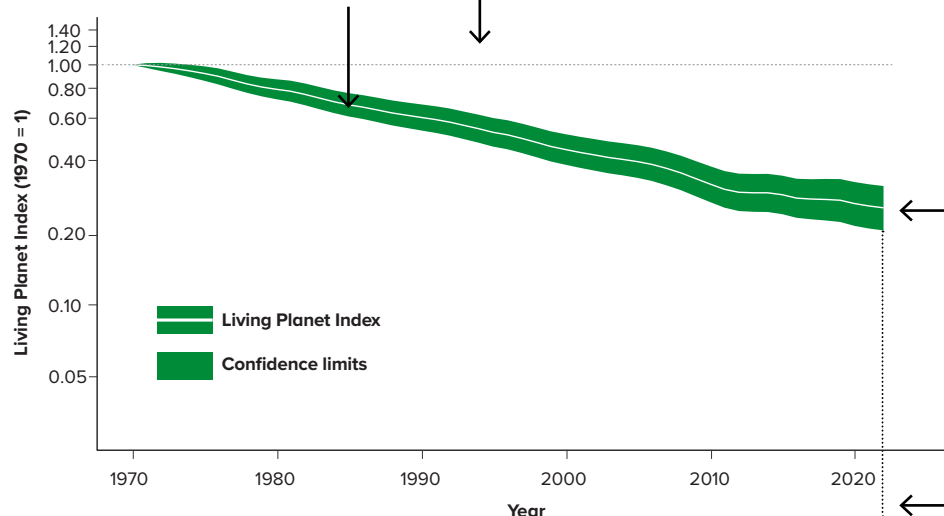
The index starts at a value of 1. If the LPI and confidence limits move away from this baseline, we can say there has been an increase (above 1) or decline (below 1) compared to 1970.

Index values

These values represent the cumulative average change in population abundance – based on the relative change and not the absolute change – in population sizes.

Representing uncertainty

The shaded areas show 95% confidence limits. These illustrate how certain we are about the trend in any given year relative to 1970. They always widen over time as the uncertainty from previous years is added to the next. Confidence limits refer to the 95% confidence of the average index value (i.e., they do not imply that 95% of the population trends are within this band).



Logged y axis

The index is presented on a logged y-axis. This is so that trends are more accurately depicted and interpreted. Without this, the trend may appear to flatten towards the end, when values become small and are visually compressed.

Cut-off

The final year of the index depends on data availability and is the latest year for which we have a good amount of data. As it takes time to collect, process and publish monitoring data, there can be a time lag before such data can be added to the LPI.

Figure 2. Explanation of the terms necessary for the interpretation of an LPI graph. See [sections 3.1.3](#) and [4.1](#) for more detail on the temporal spread of LPI data. See [section 4.2](#) for a comparison of LPI trends shown with logged and unlogged axes.

1.2.2 What can the LPI tell us?

LPI results are cumulative average trends in population size over time per chosen area and/or species group. This means that the rate of change isn't the same for each population within the index. In the case of the global LPI, some populations and species are faring worse than the average decline reported, whereas others are not declining as much or are increasing. In fact, approximately half the populations show a stable or increasing trend, and half show a declining overall trend (**Figure 3**). To understand how the overall index can still show a strong decline given this distribution of trends, see [section 4.6](#). Depending on how the existing data are grouped – by region, by ecosystem, by taxonomic group – we can see trends with different directions and magnitude.

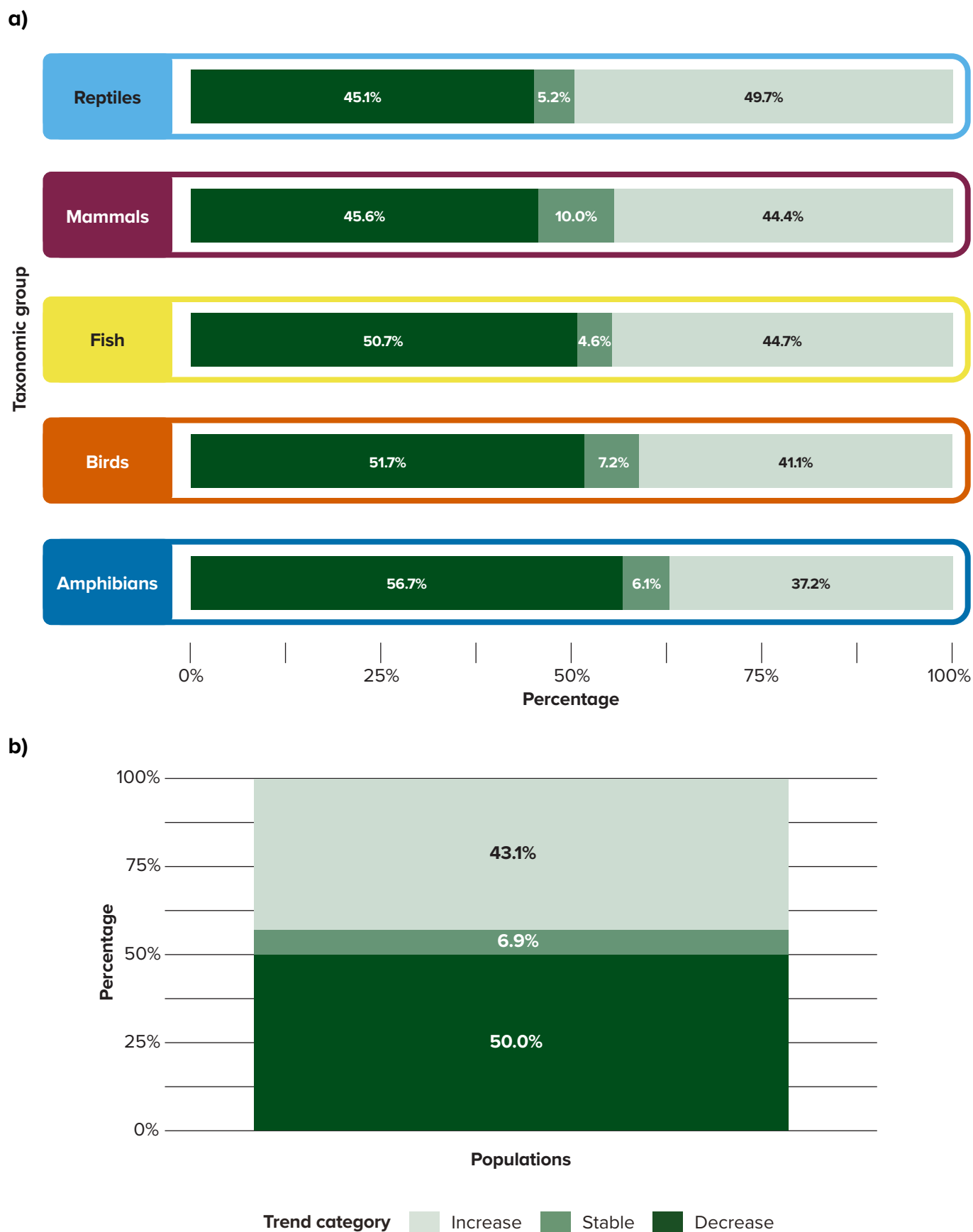


Figure 3. The percentage of decreasing, increasing and stable populations (based on the total change during the course of the time-series) a) by taxonomic group and b) in the dataset as a whole. Stable populations are defined as populations that change by less than 5% over the study period.

The LPI represents relative change for each population, which means it is not indicative of the total number of animals lost. For example, a very large population and a very small population could both decline by half. Each change would constitute a 50% decline in population size relative to the original population size, but the absolute number of animals lost would be higher for the larger population. Measuring absolute changes in population size is extremely difficult to do given differences in sampling and data reporting, which is why the LPI represents relative change in population size instead. **Figure 4** illustrates this by showing how the average change across three example populations is -18%, but the total number of animals lost from the three populations is not 18%. It also shows that the percentage change for each population can be greater or less than the average 18% decline.

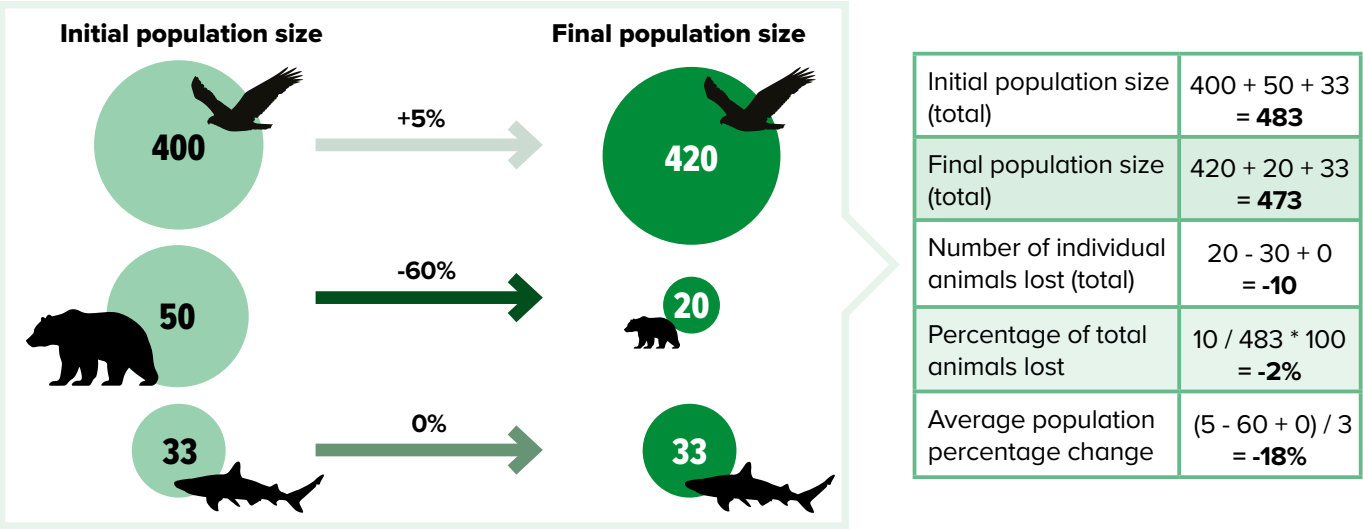


Figure 4. An illustration to show how percentage change is combined across populations and that the average percentage change is different from the number of individual animals lost.

The LPI combines different abundance measures from a large number of populations and species into one simple graph, but there are details behind the index that are necessary to understand. Below is a table (**Table 1**) correcting some common misconceptions about what the LPI does and does not show.

Table 1. A breakdown of what the LPI shows, accompanied by common misconceptions.

What the LPI shows	What the LPI does not show
The LPI is the cumulative average change in animal population sizes of native vertebrate species since 1970.	The LPI doesn't show numbers of individuals lost or extinctions of species, although some populations in the LPI do decline to local extinction.
Species and populations in the LPI show increasing, declining and stable trends.	A declining LPI does not mean all species or populations are in decline.
The reported decline is the average change in population size since 1970.	The LPI statistic does not mean that the same proportion of all species or populations worldwide are in decline, nor that the same number of populations or individual animals have been lost.
The LPI includes data for threatened and non-threatened species. If a population is monitored consistently over time, it can be included in the dataset.	The LPI does not only contain data for threatened species. The species in the LPI are not selected based on whether they are under threat, but on whether there are robust population trend data available.
Each edition of the LPI produces a final index value based on the most complete dataset available at the time of reporting, as new data for the whole period covered by the index are incorporated between reports.	Final index values should not be compared between reports, as data are added across the index period resulting in different overall change.

1.3 Uses of the LPI

1.3.1 The LPI as a communication and advocacy tool

Since its development in 1997, the LPI has been used as a communication tool to convey messages about global biodiversity change to a broad audience. Updates to the LPI are published biennially in the Living Planet Report, which is the primary means of disseminating the results. The report has a wide global reach and is published in several languages, which provides an important mechanism for raising awareness about the biodiversity crisis. The ability to distil a complex topic into a single message also means that the LPI has been used in education and outreach to young people, as well as in a nature documentary (Ledger *et al.*, 2023), where it helps to set the scene and can be used as a springboard for discussing other topics related to biodiversity change.

1.3.2 The LPI in science

The core LPI team are based at an academic institution (Institute of Zoology, ZSL), where they have led the scientific and technical development of the LPI database and method. The methods, dataset and metrics have been used by many researchers around the world. The data (with the exception of confidential records) and tools for analysis have been publicly available since 2013, enabling many to explore the data for academic research or teaching. The ancillary data in the database, which comprise information on ecology, threats and conservation management, have enabled a range of research topics to be explored. This includes measuring the effectiveness of protected areas, understanding trends in groups of species such as mammals, reptiles, freshwater megafauna, forest species, and migratory species, and analysing how populations respond to different threats like land use and climate change (see Ledger *et al.*, 2023 for individual references). The LPI method has also been applied to different datasets to create other types of indicators which measure trends in wetland areas, linguistic diversity, transparency in palm oil production and biodiversity awareness (see Ledger *et al.*, 2023 for individual references).

1.3.3 The LPI in policy

The LPI was first adopted as a policy indicator in 2005 for measuring progress towards the first target set by the United Nations Convention on Biological Diversity (CBD). It was also one of a suite of global indicators used to monitor progress towards the CBD Aichi biodiversity targets in 2010 (Secretariat of the Convention on Biological Diversity, 2010). These targets required nations to take effective and urgent action to halt the loss of biodiversity and ensure that ecosystems are resilient. This aims to guarantee that ecosystems continue to provide essential services, thereby securing the planet's variety of life while contributing to human well-being and poverty eradication. Following the failure to meet the Aichi targets, we are now in the next phase of international policy commitments to address biodiversity loss. The LPI has been included as a component and complementary indicator in three goals and four targets of the Kunming-Montreal Global Biodiversity Framework (UNEP, 2022). More information about the role of the LPI in policy can be found in McRae *et al.* (2025). In the Living Planet Report, other global CBD indicators, including the IUCN Red List Index (Butchart *et al.*, 2025; IUCN, 2026) and Biodiversity Intactness Index (Natural History Museum, 2024), are presented alongside the LPI to provide context and capture different facets of biodiversity, all of which paint a very similar picture of a global decline in nature.

1.4 Advantages and challenges of using the LPI

1.4.1 Advantages

Alongside its role in describing vertebrate population change, the LPI has functioned as a talking point for public engagement events. It has been presented to groups from children to scientists and policy makers, engaging people in conversations about the natural world and how to conserve it. Apart from aggregating abundance information into a global indicator, provided there are enough data, LPIs can also be calculated at smaller spatial scales, such as regions or countries, and for different taxonomic groups or ecosystems. This makes the LPI a useful tool for national and conservation monitoring. The LPI is a valuable resource for student training at undergraduate and postgraduate level, through both formal teaching and independent research projects. There are also several additional reasons why the LPI (and the LPD) can be a useful tool for tracking biodiversity trends and therefore helpful for policymakers:

- It is the largest available repository for vertebrate population abundance data.
- It includes primary data, collected in the field at known locations.
- The dataset is long-term, continuously updated and expanding.
- It includes an increasing proportion of research and publications in languages other than English, which can help to improve the representation of data from biodiverse regions where English is not widely spoken.
- Because the data are publicly available, they can support research.
- The method is peer-reviewed.
- The index is sensitive to annual changes.
- The trajectories of the LPI trends are broadly consistent year after year, even with the addition of more data. This consistency suggests the LPI is likely capturing biological changes and is not driven by fluctuations in data availability.
- The method is designed to limit the impact of taxonomic and geographic bias.
- The index is relatively simple to communicate.

1.4.2 Challenges

Tracking the world's biodiversity over time is a challenging task. Many elements of the LPI have been improved over the years in order to fulfil its primary aim: to indicate a trend in vertebrate population sizes. Below, we clarify some of the remaining challenges that accompany the precision and the interpretation of the LPI. The LPI team is working with collaborators to address these challenges and values support in doing so.

- The dataset does not include invertebrates or plants. This is currently being addressed through a series of collaborations to explore the population trends of specific groups of invertebrates and plants (e.g. Riva *et al.*, 2026).
- The method reflects cumulative changes over time, meaning that the change in Year 2 is added to the change in Year 1, all the way to Year 52. Declines in some species populations that happened early on in the index are therefore reflected in the final index values.
- The LPI captures cumulative population changes from its 1970 baseline, so historical declines that occurred before this period are not reflected in the final index value. Consequently, index declines in regions such as Europe and North America, which had already experienced substantial biodiversity loss before 1970, may appear less significant than in tropical regions that had relatively higher levels of biodiversity at the start of the index.
- The starting years for individual populations within the overall database differ as not all time-series in the LPI start in 1970 and end in 2022.
- The method of aggregating the LPI can be sensitive to strong population declines and fluctuations, or short and sparse time-series. More detail on this in [section 4.5](#).
- The dataset is biased towards well-studied species groups and regions. This is common in many biodiversity datasets, where species that are charismatic, threatened or easier to observe tend to be better represented (Donaldson *et al.*, 2017; Troudet *et al.*, 2017).
- The global LPI masks the different trends seen amongst taxonomic groups and regions. This is addressed through the IPBES regional analysis and by showing the proportion of increasing, decreasing and stable population trends in this document (see [Figure 3](#) and [Figures 15-18](#)).
- Reflective of both the dominance of English in scientific literature (Amano *et al.*, 2016) and the languages spoken by the team, the index is dominated by data from sources in English. As this risks exacerbating existing geographic biases and limiting the representativeness of the index (Ledger *et al.*, 2023), the team is working with collaborators to address this through targeted literature searches in other languages (Serrano *et al.*, 2025).

2. THE LIVING PLANET REPORT RESULTS

2.1 Number of populations and species

The 2024 Living Planet Report used data from 34,836 populations of 5,495 species for the period 1970 to 2020. For the 2026 report, the index has been extended by two years to 2022, and it is now based on 35,803 populations of 5,790 species – 967 more populations and 295 more species than before. There are also more species and populations from all of the IPBES regions in the 2026 compared to the 2024 dataset. The largest increases can be seen in the number of species in Africa, and in the number of populations in Africa and Latin America and the Caribbean (**Table 2**). Both of these regions were a particular focus for data searches since the last Living Planet Report. For South America, the effort was once again supported by our ongoing collaboration with colleagues in Brazil. More detail on changes in data representation within the different IPBES regions can be found below.

Table 2. Changes in the number of populations and species globally and in each IPBES region between the 2024 (WWF, 2024) and 2026 Living Planet Reports (WWF, 2026).

	LPR 2026 Populations/Species		LPR 2024 Populations/Species		Difference Populations/Species	
Global	35,803	5,790	34,836	5,495	2.8%	5.4%
North America	2,454	938	2,449	935	0.2%	0.3%
Latin America and the Caribbean	4,737	1,405	3,936	1,362	20.4%	3.2%
Europe and Central Asia	4,868	645	4,615	619	5.5%	4.2%
Africa	2,622	759	2,304	552	13.8%	37.5%
Asia and the Pacific	4,664	787	4,622	768	0.9%	2.5%

2.1.1 Why the numbers of species and populations change between reports

Although the 2026 global index includes 295 more species and 967 more populations compared to the previous Living Planet Report, this is not necessarily the amount of data that has been added in the interval between the two reports. Counts can change for a number of other reasons, for example:

- There have been taxonomic changes following revisions in naming conventions, which will have had an impact on the overall species count. This is the case, for example, when previously distinct species are grouped under one name, or a distinct species is split into two or more species names.
- When the global LPI is calculated, any population surveys that overlap with others (so-called “replicates”) are filtered out and excluded from analysis to prevent double counting. To decide which of the overlapping populations to keep, we consider the area or number of individuals represented by that population (tending towards larger-scale studies) as well as the quality of the data (tending towards higher-quality data, i.e. longer and fuller time-series). For example, if there is a population survey for Blackbirds in the UK and one for the whole of Europe and both cover the same time period, we keep the Europe-wide population in the global LPI and exclude the UK one. The UK population stays in the data portal, however, as it could be useful for smaller-scale analyses. As we collect new population data, we often need to adjust the tagging of replicates in the database, and this can reduce the total number of populations for a given species that is included in the global LPI. If one new population was monitored at a larger scale and overlaps with existing smaller-scale populations in the database then the latter will be tagged as replicates and not count towards the population total for the global LPI, leading to fewer populations overall.

2.2 Main trends in the LPR 2026

The main trends from the 2026 Living Planet Report, based on a dataset of 35,803 populations of 5,790 species, are presented in [Table 3](#). It shows the results for each of the system and IPBES region LPIs. The global LPI for 2026 indicates an average decline of 73% in species population relative abundance between 1970 and 2022.

Table 3. The results from the Living Planet Report 2026. For the 2026 index values, the LPI database is divided into several subsets. Each subset contains a different number of species and shows a different average percentage change in population size over time. The confidence limits show how certain we are about a trend in any given year relative to 1970 and are indicative of the variation in the underlying population trends. From WWF (2026).

		Number of species	Percentage change 1970-2022	95% confidence limits (Lower/Upper)	
Global	Global	5,790	-73%	-78%	-67%
Systems	Freshwater	1,510	-85%	-90%	-77%
	Terrestrial	2,773	-69%	-78%	-57%
	Marine	1,801	-59%	-69%	-45%
IPBES regions	North America	938	-28%	-51%	5%
	Latin America and the Caribbean	1,405	-95%	-97%	-91%
	Europe and Central Asia	645	-23%	-37%	-3%
	Africa	759	-80%	-91%	-57%
	Asia and the Pacific	787	-49%	-72%	-8%

2.3 The LPI by IPBES region

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES; IPBES, 2019) divides the world into different geographic regions to help assess and monitor nature. In recent years, the LPR has presented trends for terrestrial and freshwater species from each of these regions. In 2026, the overall percentage change for some of the regions differed from those published in 2024. Whilst, as explained in [section 4.1](#) below, LPIs from different publication years should not be compared directly, the following explanation describes how the dataset has changed (see also [Table 2](#)) and how this has influenced the new results for 2026.

2.3.1 Africa

There has been a 14% increase in the number of populations and 38% increase in the number of species (over 200) in the Africa LPI as a result of a targeted project to collect information and close data gaps in the region. Data were added primarily for birds, with many species new to the database, but also for mammals and amphibians. Most of the new populations and species came from South Africa, Cameroon, Ghana and Côte d'Ivoire. The negative trend from the LPR 2024 (WWF, 2024) for the region has continued after the addition of data for new locations and species.

2.3.2 Asia and the Pacific

In the Asia and the Pacific LPI, the total number of populations increased by 1% and the number of species by 2%. The addition of new data has changed the trajectory of the index from about 2016 onwards, leading to a smaller overall decline compared to the baseline than in previous reports. Data for a variety of taxa was added for Australia, and new data were also added mainly for mammals and birds from a range of countries, particularly some Pacific islands. The increase in the trend from 2010 to 2020 is driven by trends in the

herptiles (amphibians and reptiles combined) included in this part of the index; when these groups are removed, the index shows a continued declining trend.

2.3.3 North America

There was a small increase in the number of populations and species in the North American dataset due to taxonomic changes and the addition of some new data. Time-series from the United States Geological Survey (USGS) Breeding Bird Survey were updated for all species. This year's results indicate a smaller decline in the region than previously estimated (-28% by 2022) as there is an uptick from 2018 which also appeared in the trend for LPR 2022 (WWF, 2022). This upward trend is largely driven by a positive trend in freshwater fish from 2020 and a simultaneous stabilisation of the mammal trend.

2.3.4 Latin America and the Caribbean

There was an increase in the dataset for Latin America and the Caribbean of 20% in populations and 3% in species. Much of this was for Brazil where our collaborators provided a large dataset from a monitoring programme for protected areas. New bird species were also added for Mesoamerica and islands off the Pacific coast of South America. The trend for LPR 2026 is very similar to LPR 2024 albeit slightly more negative when extended to 2022, with few changes to the underlying taxonomic trends. Average declines are seen across all taxonomic groups, with amphibians and reptiles and fish showing more negative trends than birds and mammals.

2.3.5 Europe and Central Asia

The Europe and Central Asia dataset also saw an increase in numbers: 6% in populations and 4% in species. New data added were primarily for amphibian species across a range of countries, and also for some freshwater fish. In addition, the trends from the Pan-European Common Bird Monitoring Scheme (PECBMS) were updated up to 2024. The index for LPR 2026 showed a similar shape of trend for the region but, overall, it is less negative than the index for LPR 2024. This is due to the addition of new freshwater fish data which has produced a less negative trend for this group compared to the same result for LPR 2024. The 2026 index slowly increases until 1990 and then declines. This change in trend is driven by freshwater fish and herptiles which both have fairly stable trends until the 1990s and then both trends become negative. Bird and mammal populations both show an overall increase in abundance since the 1970s.

3. METHODS

3.1 The building blocks of the LPI: the Living Planet Database (LPD)

The building blocks of the LPI are time-series of either population size, density (population size per unit area), abundance (number of individuals per sample) or a proxy of abundance (for example, the number of nests recorded may be used instead of a direct population count). Data are sourced through systematic searches of scientific journals, keyword searches and querying online databases. The protocol for including data in the LPD requires that a time-series is for a single species, there are at least two years of data available and that the method used for the survey has been consistent over the years. [Figure 5](#) describes the full data inclusion protocol.

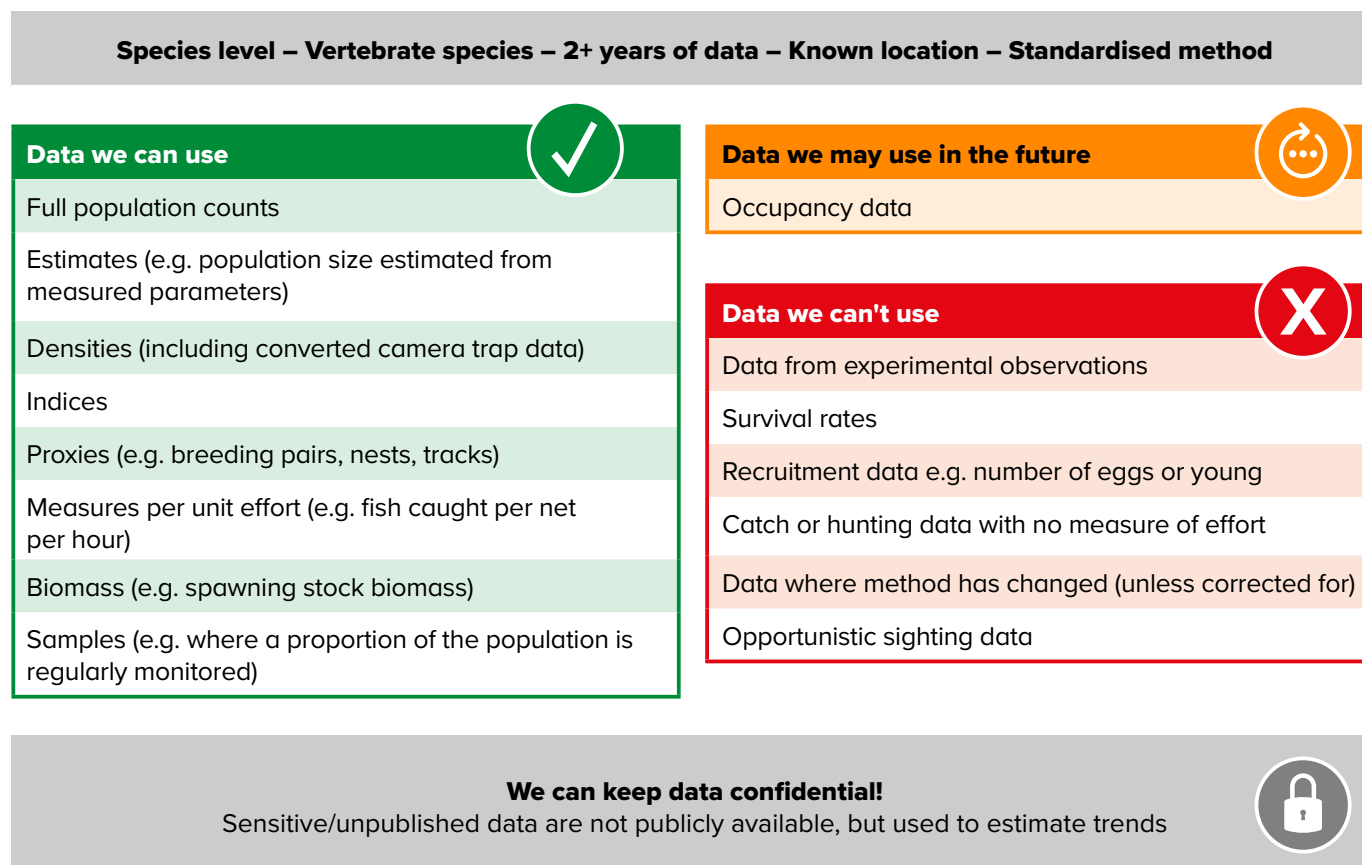


Figure 5. Criteria for including data in the Living Planet Database.

The Living Planet Database is continually evolving as we add data for an increasing number of species in different regions every year (**Figure 6**). By collecting additional information alongside species population trends – such as the taxonomic group of the species monitored, where it lives, or what the local threats are – we can increase the value of the LPI data beyond the statistics, enabling many strands of research and a more in-depth view of the changes in species around the world (e.g. Capdevila *et al.*, 2026). The data and the methodology used to calculate the LPI have been increasingly used in a variety of scientific outputs to look at population trends in different taxa, regions and species groups. For a full list of publications about the LPI or using the LPD from the team at ZSL, please visit the [LPI website](#).

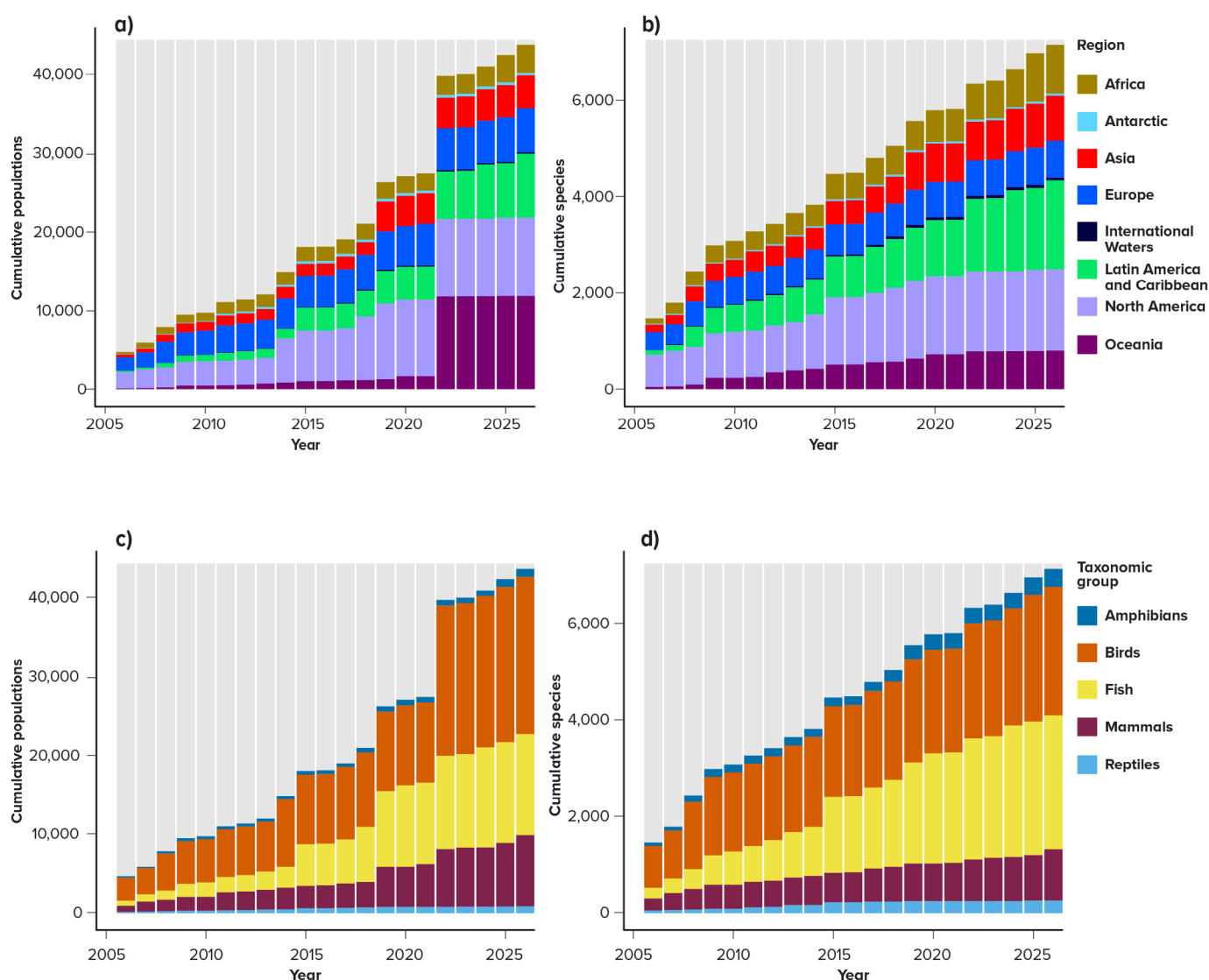


Figure 6. Growth in number of populations and species in the Living Planet Database by region and taxon. The cumulative number of a) populations and b) species entered by region, and the cumulative number of c) populations and d) species entered by taxon. Please note that numbers in 6b add up to more than the total number of species in the database as some species occur in more than one region.

3.1.1 Geographic representation

In terms of geographic representation, **Figure 7** shows the distribution of populations included in the Living Planet Database. It is clear from the map that there are more data from regions with a longer history of monitoring and publishing data, such as North America and Europe. Larger gaps tend to be in more remote, tropical areas. Despite this, the tropical species count has been growing over the past few reports, so representation of the more species-rich tropical regions is also improving. Representation can be boosted by searching international publications for data in tropical areas, but also by searching in languages other than English or in more local journals. For example, the collaboration with in-country researchers collecting data in Portuguese has continued to help rapidly expand the dataset for Brazil, as it did for previous reports. There is also evidence that local journals contain data from different locations within the same country compared to international journals (Serrano *et al.*, 2025). Future data searches would therefore benefit from closer collaboration with research groups and institutions within under-represented regions or countries to expand geographic coverage by tapping into local publications.

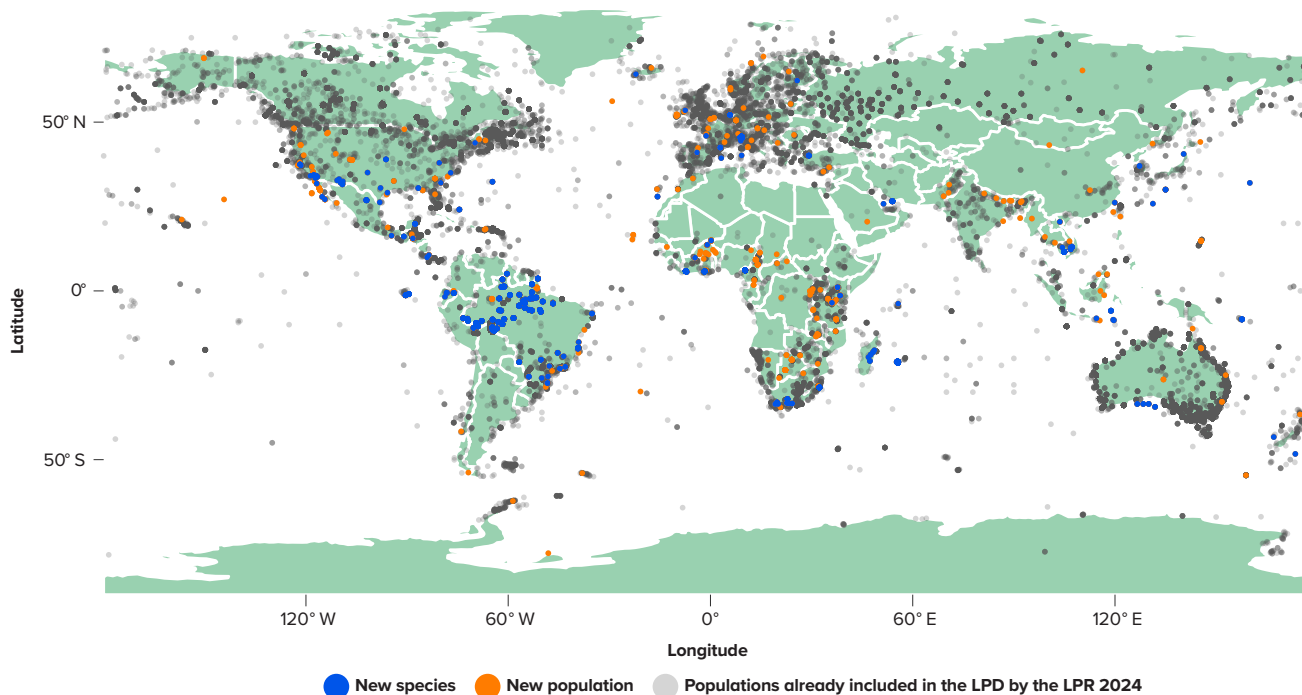


Figure 7. Locations where animal populations included in the Living Planet Database were monitored. Where monitoring locations overlap or occur close to one another, the overlap of the corresponding light gray dots results in a darker shade of gray.

3.1.2 Taxonomic representation

While an LPI can be calculated using data from any species, the current approach focuses only on vertebrate species (i.e. birds, mammals, fish, amphibians and reptiles) because these groups have been monitored more consistently and for longer. It remains important to understand the representation of these groups within the LPI, as it tells us how well the index reflects the biodiversity we are trying to measure. **Figure 8** shows the number of species included in the current global index for each taxonomic group compared to the number of species that are known to exist. It shows that the current index represents between 2% and 18% of known species within vertebrate taxonomic groups, with mammals and birds being the best represented in the available data. Amphibians and reptiles remain the most underrepresented taxa in the LPI.

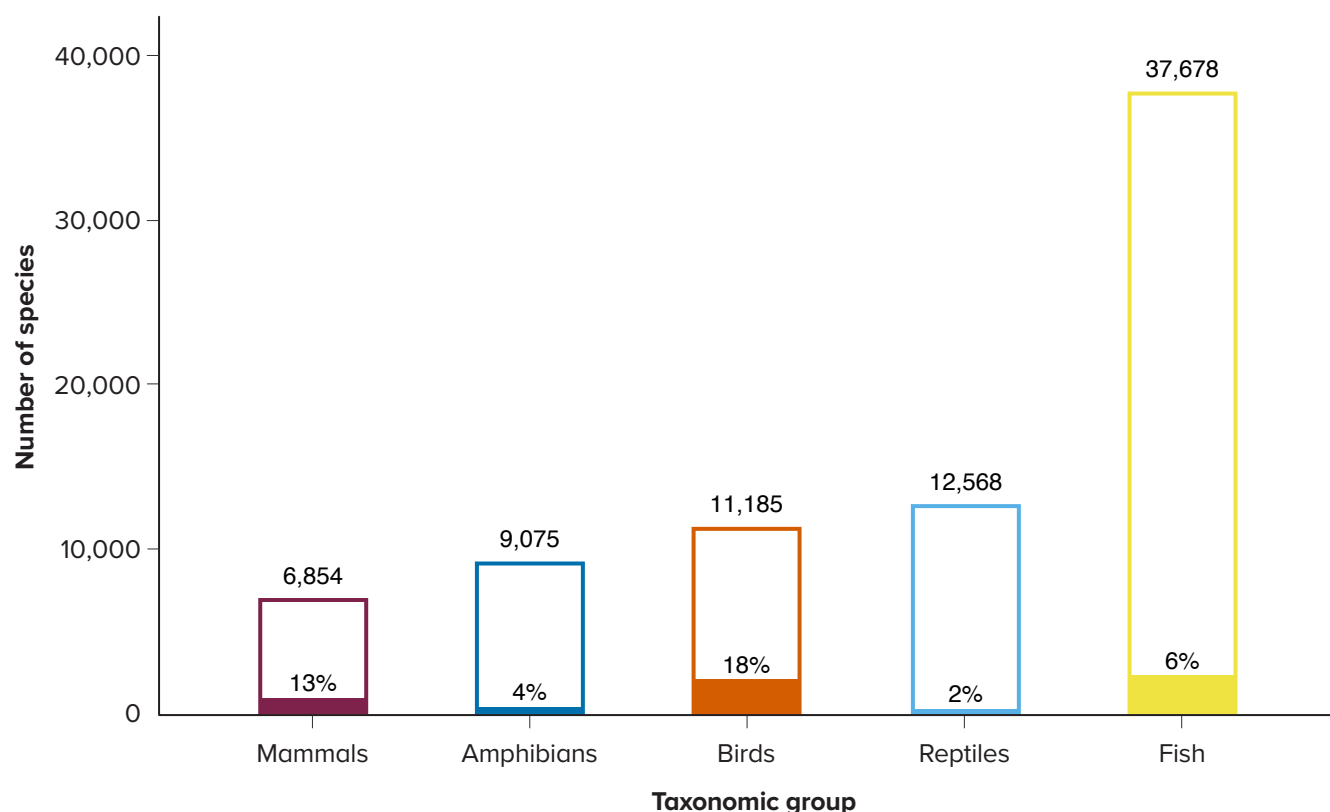


Figure 8. The number of species included in the LPI for each taxonomic group compared to the number of species known to exist. Values at the top of each bar indicate the number of species known to exist, while inset percentages represent the proportion of known species that are currently included in the LPI.

3.1.3 Temporal representation

There are three main sources of variation in the temporal representation of populations in the LPD: the year that the monitoring started, the duration over which that monitoring continued and how frequently the population was surveyed. This variation occurs because the data are collected from a variety of sources and not a single monitoring scheme. Often, populations are monitored for short time periods because a project ends, the funding for the monitoring runs out, or the survey location becomes unsuitable for monitoring (for example due to external factors such as conflict, or changes to the land from infrastructure development). **Figure 9** shows how the data in the Terrestrial, Freshwater and Marine LPIs varies according to the year the monitoring started and how long it continued for. The LPI can be sensitive to the inclusion of trends in time-series with shorter lengths. This effect is explored as part of the sensitivity tests conducted for each iteration of the LPI ([section 4.5.2](#)). Finally, new data can be added to any year in the dataset. This changes the temporal coverage of the entire index so the amount of data available for each year varies for each version of the LPI (see [section 4.1](#)).

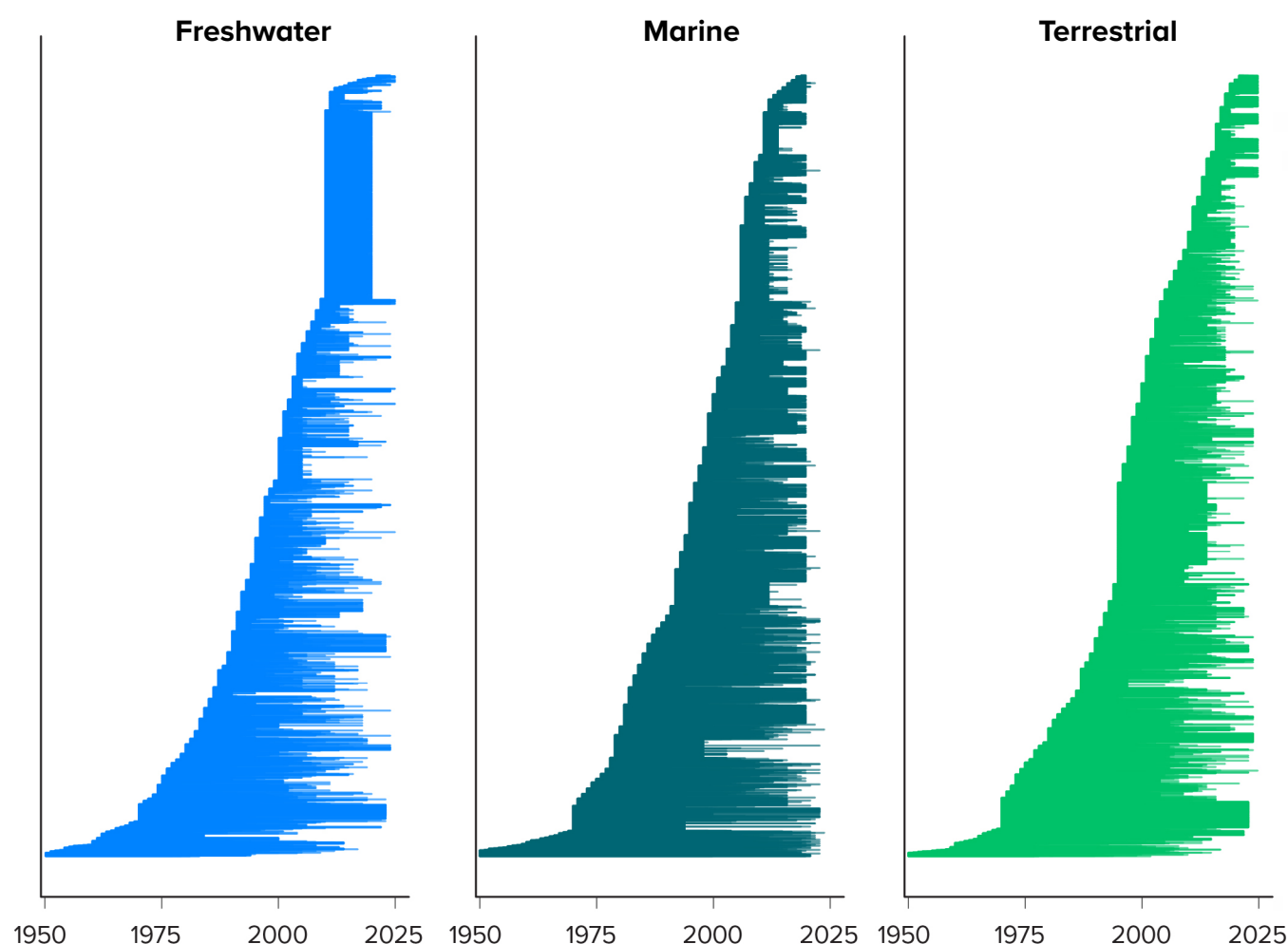


Figure 9. Temporal coverage of Living Planet Database population time-series between 1950 and 2025 for Freshwater, Terrestrial and Marine populations. Each horizontal line represents a population time-series from its first year of monitoring to the last year. Populations are ordered by the first year of monitoring. Updated from Oppenheimer *et al.* (2026).

3.2 Calculating the LPI

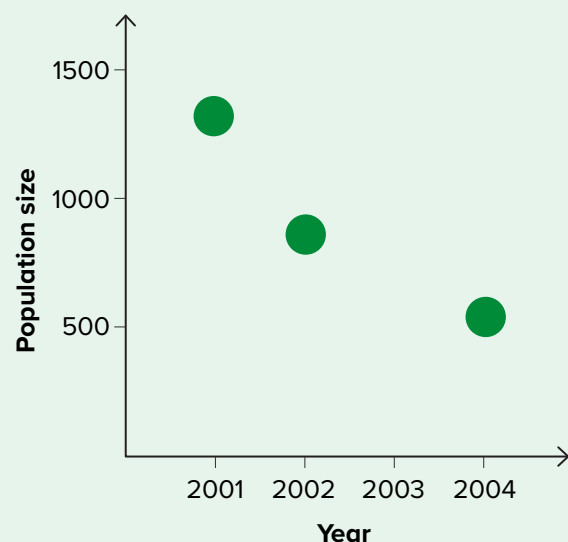
3.2.1 Step-by-step guide

To calculate a simple LPI (LPI-U = unweighted), the rate of change from one year to the next is calculated for each population. If the available data are from only a few (less than 6), non-consecutive years, a constant annual rate of change in the population is assumed between each data year. Where data are available from many years (consecutive or not) a curve is plotted through the data points using a statistical method called Generalised Additive Modelling (GAM). Average annual rates of change in populations of the same species are then aggregated to the species level and then to higher levels (e.g. taxonomic group and biogeographic realm; see [Figure 10](#)). The LPI is then calculated as the cumulative trend over time from these aggregated annual rates of change, with the index set to a baseline value of 1 in the starting year (1970). This method is used for smaller subsets of data such as the LPI for migratory freshwater fish (Deinet *et al.*, 2024). For illustrative purposes, [Figures 10](#) and [11](#) show a slightly simplified version of the full LPI process and use an arithmetic mean, although we use the geometric mean in the calculation of the LPI (see [section 4.3](#)). For the detailed process, please refer to the peer-reviewed method papers (Collen *et al.*, 2009; McRae *et al.*, 2017).

STEP 1

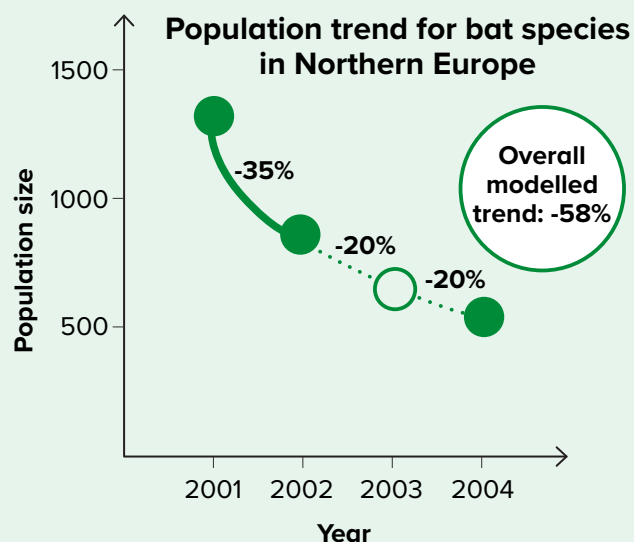
Collect data on a single population, at a specific location, over time.

Bat species in Northern Europe



STEP 2

Use Generalised Additive Modelling or log-linear interpolation to insert numbers for missing data years, then calculate annual population trends by comparing population size in any year to population size in the previous year.



STEP 3

Average the interannual change across all populations of a species to give an average annual change and an overall trend for that species in its biogeographic realm.

Bat species in the Palearctic realm



Average realm population trend: -69%

STEP 4

Average the interannual change across all species in the group to produce an overall trend for the species group in its biogeographic realm.

Average population trend for terrestrial mammals in the Palearctic realm

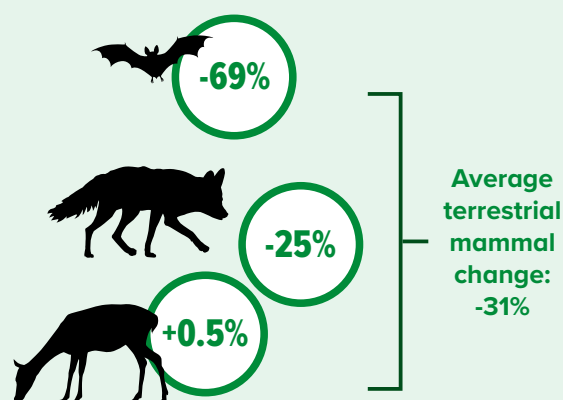
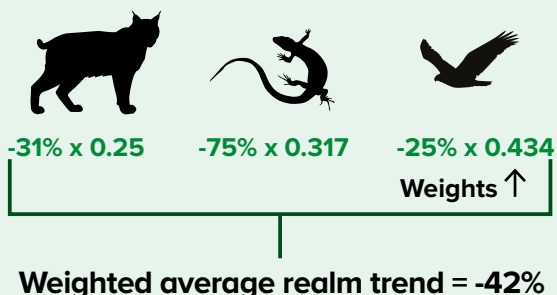


Figure 10. A step-by-step guide to calculating an LPI using the unweighted method. Please note that all numbers in this calculation of an index for terrestrial mammals in the Palearctic biogeographic realm are fictional. Modified from Westveer *et al.* (2022).

STEP 5

Apply a weight factor to each taxonomic trend, depending on system, taxonomic group and biogeographic realm. The weight factor is determined by how much of the world's vertebrate biodiversity the species group represents within the realm. For example, the weight factor for terrestrial mammals in the Palearctic is 0.25 because they represent 25% of vertebrate species in this realm.

Weighted trend for all terrestrial species in the Palearctic realm



STEP 6

Include all terrestrial biogeographic realm trends to calculate the average system trend of population change. Apply the weight factor according to biogeographic realm.

Weighted trend for terrestrial species globally

Palearctic = $-42\% \times 0.116$
Nearctic = $-50\% \times 0.062$
Afrotropical = $-70\% \times 0.19$
Neotropical = $-80\% \times 0.321$
Indo-Pacific = $-60\% \times 0.292$



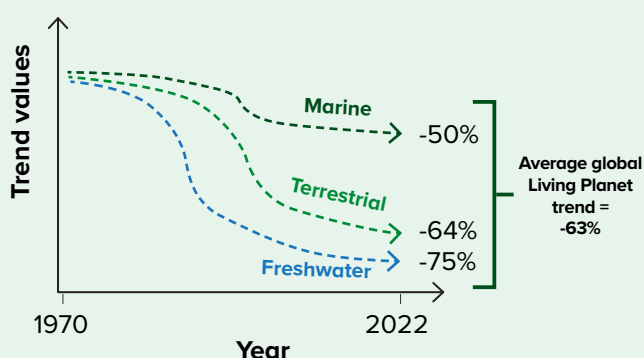
Weights

Weighted average Terrestrial trend = -64%

STEP 7

Include all weighted average system trends to calculate the cumulative average global trend. The averaging and weighting is done separately for populations occurring in the three systems (Terrestrial, Freshwater and Marine), which are then equally weighted to obtain one set of interannual change values.

System Living Planet trends



STEP 8

Set baseline global index value to 1 in 1970 and calculate all other index values based on the interannual change values from Step 7.

Global Living Planet trend

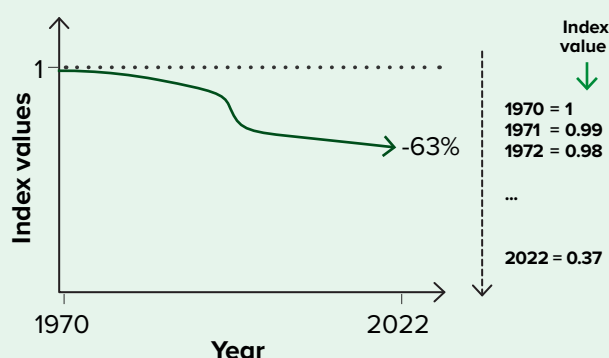


Figure 11. A step-by-step guide to calculating an LPI with weightings. Steps 1-4 illustrated in Figure 10 would need to be carried out prior to step 5 in this figure to calculate a weighted LPI. This method is used for larger subsets and the global LPI and incorporates a weighting score according to the estimated number of known species in the world within each species group and realm. Please note that all numbers in this calculation are fictional. Modified from Westveer *et al.* (2022).

3.2.2 Weightings – how and why they are used

There is no “perfect” LPI which has data for all species from everywhere in the world. This is because monitoring isn't consistent across regions and taxa. The challenge, therefore, is to represent all described vertebrate species using only those for which data are available. One way we try to address this problem is to collect more data and continue to improve the taxonomic and geographic coverage of the dataset. Data searches are ongoing, and the database is continuously augmented, particularly for taxa and regions that are underrepresented. In 2014, we made the choice to mitigate the remaining bias in the dataset, thus making the indicator more representative of vertebrate biodiversity, by incorporating weightings into the methodology to account for the estimated diversity of species globally (McRae *et al.*, 2017).

As described in [section 3.1](#), the rate of change from one year to the next is calculated and aggregated to the species level and then higher levels (e.g. per taxonomic group). For the global and IPBES LPIs, weightings (listed in [Tables 4 and 5](#)) are applied as these trends are aggregated to higher levels, based on how much of the world's known vertebrate biodiversity the species in the LPI represents. This is to account for certain geographic and taxonomic biases in the dataset (McRae *et al.*, 2017). This method is called the “LPI-D” (= diversity-weighted; [Figure 11](#)), and it is normally used for larger subsets.

Table 4. Terrestrial and Freshwater weightings applied to taxa/realms when calculating a global LPI. From McRae *et al.* (2017). Please note that weightings add up to 1 across taxonomic groups within each system/realm combination, and that weightings have been rounded to three decimal places.

		Afrotropical	Nearctic	Neotropical	Paleartic	Indo-Pacific
Terrestrial groups	Birds	0.387	0.376	0.388	0.434	0.397
	Mammals	0.198	0.250	0.128	0.250	0.172
	Amphibians and reptiles	0.415	0.374	0.484	0.317	0.431
Freshwater groups	Fishes	0.591	0.565	0.584	0.593	0.493
	Birds	0.193	0.204	0.107	0.211	0.177
	Mammals	0.009	0.014	0.010	0.016	0.008
	Amphibians and reptiles	0.207	0.217	0.298	0.180	0.322

Table 5. Marine weightings applied to taxa/realms when calculating a global LPI. Updated since McRae *et al.* (2017) to reflect changes in the source of marine species estimates, the [Ocean Biodiversity Information System](#). Please note that weightings add up to 1 within each realm, and that weightings have been rounded to three decimal places. There are no marine amphibian species.

	Arctic	Atlantic North Temperate	Atlantic Tropical and Subtropical	Pacific North Temperate	Tropical and Subtropical Indo-Pacific	South Temperate and Antarctic
Fishes	0.754	0.833	0.895	0.880	0.932	0.918
Birds	0.205	0.144	0.094	0.090	0.056	0.056
Mammals	0.041	0.021	0.008	0.028	0.006	0.024
Reptiles	0	0.003	0.002	0.001	0.006	0.002

3.2.3 Calculating the global LPI

The global LPI is a weighted index, and it is calculated following the steps presented in **Figures 10 and 11**, through a hierarchical weighting process that is illustrated in **Figure 12**.

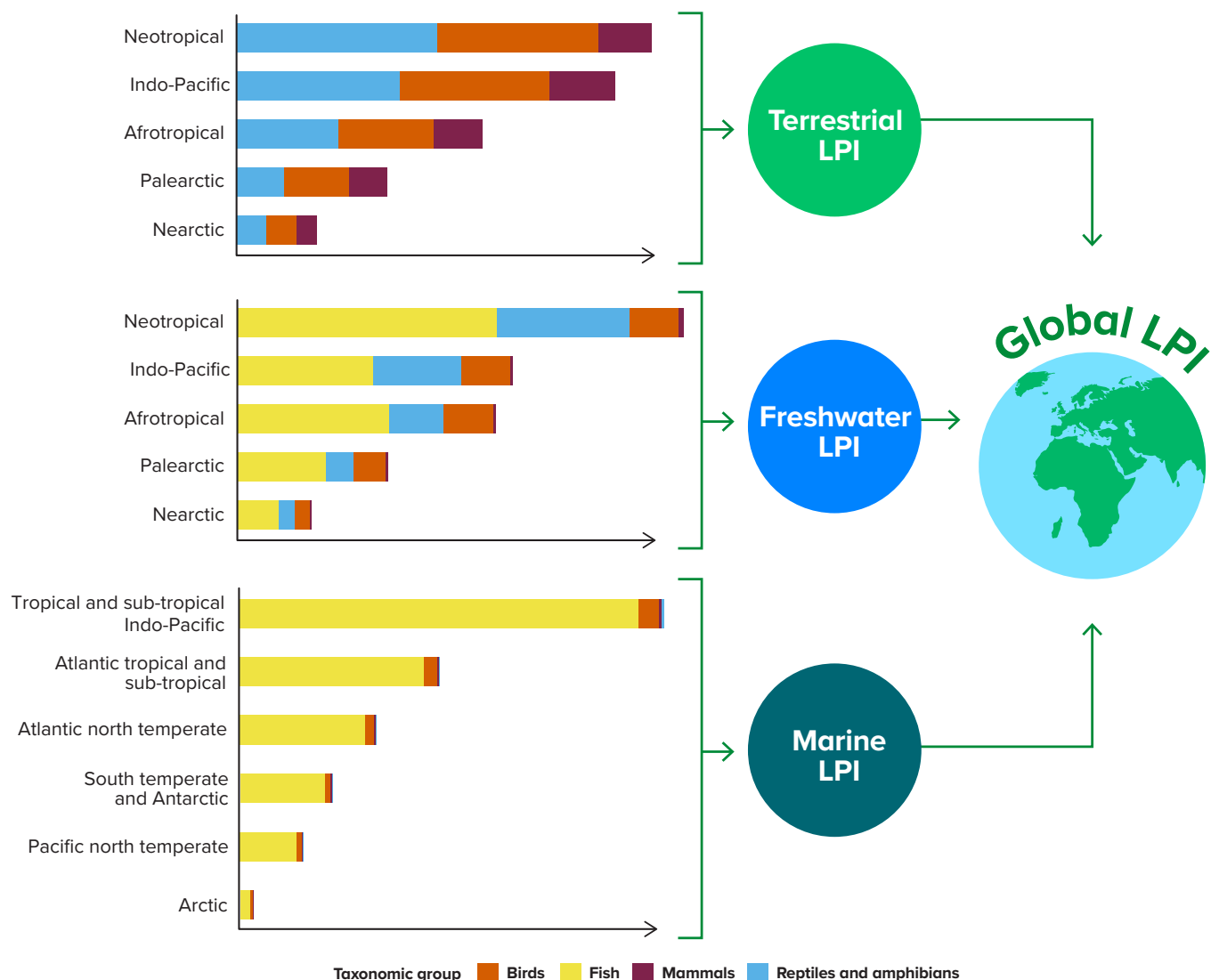


Figure 12. Schematic of the weighting process. Systems (Terrestrial / Freshwater / Marine) are weighted equally. Within each system, the proportion of species found across the realms that compose that system (the length of the bars above) is used to proportionally weight each realm index. Within each realm, the diversity of species is used to weight taxonomic indices (the relative size of the sections of the bars above). Modified from McRae *et al.* (2017).

Calculating this global indicator and its subsets requires a series of additional steps both before and after analysis.

- Whenever data for a new species is entered into the LPD, the species name is checked against specific taxonomic authorities to ensure consistent naming. All population trends for one species can then be averaged together to form a single species trend when needed, even if the original source assigns a different species name to a trend. In addition to this, all populations are marked as native or non-native in the location where the population was monitored. This is important, as often national and international commitments to protect biodiversity focus on native species. This is the case for the Global Biodiversity Framework goals, and that is why the decision was made to include only native species in the 2026 global LPI (see [Figure A1](#) in the Appendix) (UNEP, 2022).
- Before data are added to the LPD, the quality of the data source is carefully assessed. This ensures that all sources in the database are deemed robust, referenced and traceable. However, in some cases a single population can have an undue effect on the overall trend, meaning that their presence will cause a noticeable shift in the trend trajectory (usually over a short period) or final value of the global or realm-level trends. This is routinely checked as part of the tests we carry out during the LPR analysis. These populations are removed, not because they are low quality or the trends are not valid per se, but because we want LPI trends to be representative of a broad set of species, and not to be driven by individual populations. These populations are marked with a “1” in the “Exclude” column in the public dataset, which is published on the [Living Planet Index website](#). A comparison of the global trend calculated with and without these populations is shown in [Figure A2](#).
- As described in more detail in [section 2.1](#), populations for the same species monitored in the same location overlapping for more than three years in time are considered “replicates”. Only one of them is ever used in the global LPI calculations, to avoid potentially double-counting individuals. Replicates that are excluded in the global analysis are marked with a “1” in the “Replicate” column in the public dataset.
- In the calculation of the LPI, as a way to ensure the robustness of the index, interannual change values are capped to 10-fold increases or declines, to limit changes deemed less likely biologically.
- Finally, index values are smoothed using a 3-year running average but keeping the first and final index values fixed. This helps to show the long-term trend more clearly by reducing small year-on-year fluctuations. The difference between the smoothed and unsmoothed global trend is shown in [Figure A3](#).

4. TECHNICAL Q&A

4.1 Why the final value changes, and why it is not recommended to compare to previous reports

The global LPI has consistently shown a declining trend in different editions of the Living Planet Report. However, the final value of the global LPI and its subsets have changed in each edition of the report. The reasons for this are twofold.

Firstly, the database is continually evolving and for each Living Planet Report a larger dataset is available for analysis (see [Figures 6 and 13](#)). Data for the LPI are gathered from a variety of sources, such as journals, online databases and government reports, that contain time-series of vertebrate populations spanning any number of years between 1970 and the final year of the index. The addition of new data changes the overall composition of species and populations in any given year, meaning that the average value of each global LPI can change as a result.

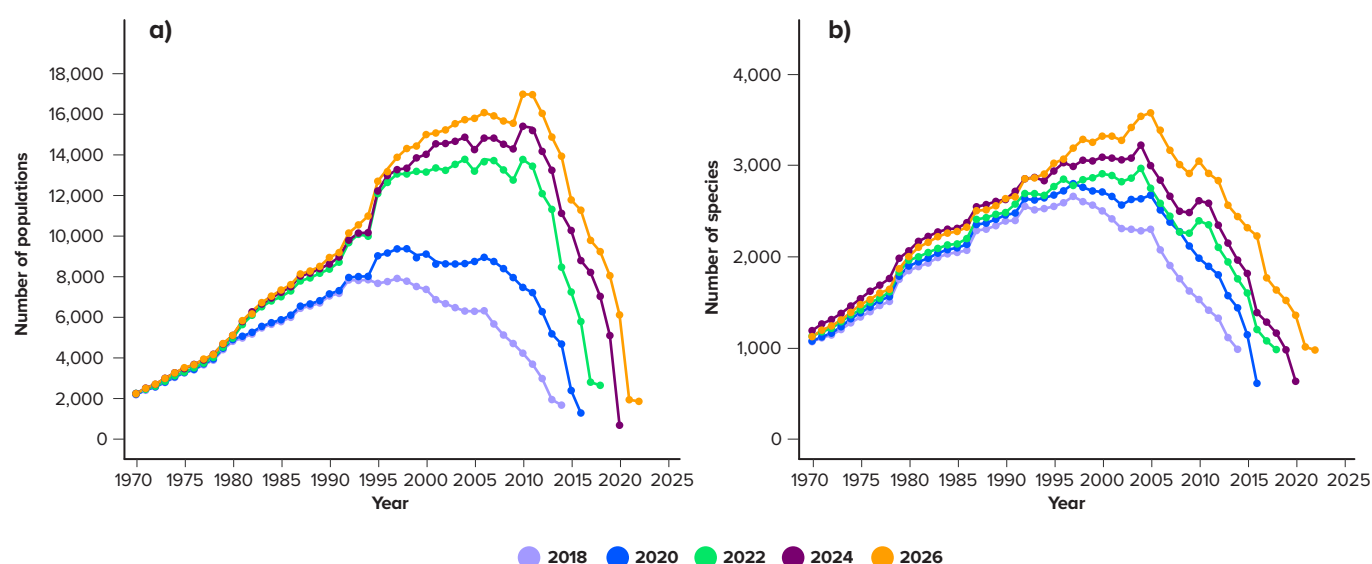


Figure 13. Number of a) populations and b) species with data available in each year for the global trends presented in each edition of the Living Planet Report from 2018 to 2026. Please note that the number of species included in the trends presented in the LPR 2026 is slightly lower than the corresponding value for LPR 2024 in some years. This is due to taxonomic changes and quality checks, as described in [section 2.1](#).

Secondly, some of these new data points will add information from more recent monitoring, so that existing indices may be extended by two years for each new edition of the Living Planet Report. This new information might reflect similar trends (e.g. -2% per year) for existing species or populations but, as new data is incorporated across the index period, the annual changes to these populations will differ, resulting in different overall changes in the global dataset.

Overall, the new final value generally stays within or close to the range of previous results (as measured by the confidence limits) so there are similar overall trends even if the final percentage value is different, which supports the reliability of the index.

4.2 Presenting the LPI on logarithmic vs. arithmetic axes

LPI indices are presented on a logarithmic scale. This has the effect of spacing out the lower values on the y axis, so that trends are more accurately depicted, particularly towards the end of the index when the values become very small. On the arithmetic scale it looks like the trend is almost flattening towards the end, whereas the logged scale visually reflects the decline in the index value that is still ongoing ([Figure 14](#)). Plotting on the arithmetic scale could lead to misinterpretations of the index, as readers might assume that the decline has stopped. It is also appropriate as the growth or decline in wildlife populations is multiplicative, which is best shown on a logged axis. This way of presenting indices is most important for trends that decline to very small values, such as the Freshwater LPI or the LPI for Latin America and the Caribbean, but it is appropriate for all LPIs.

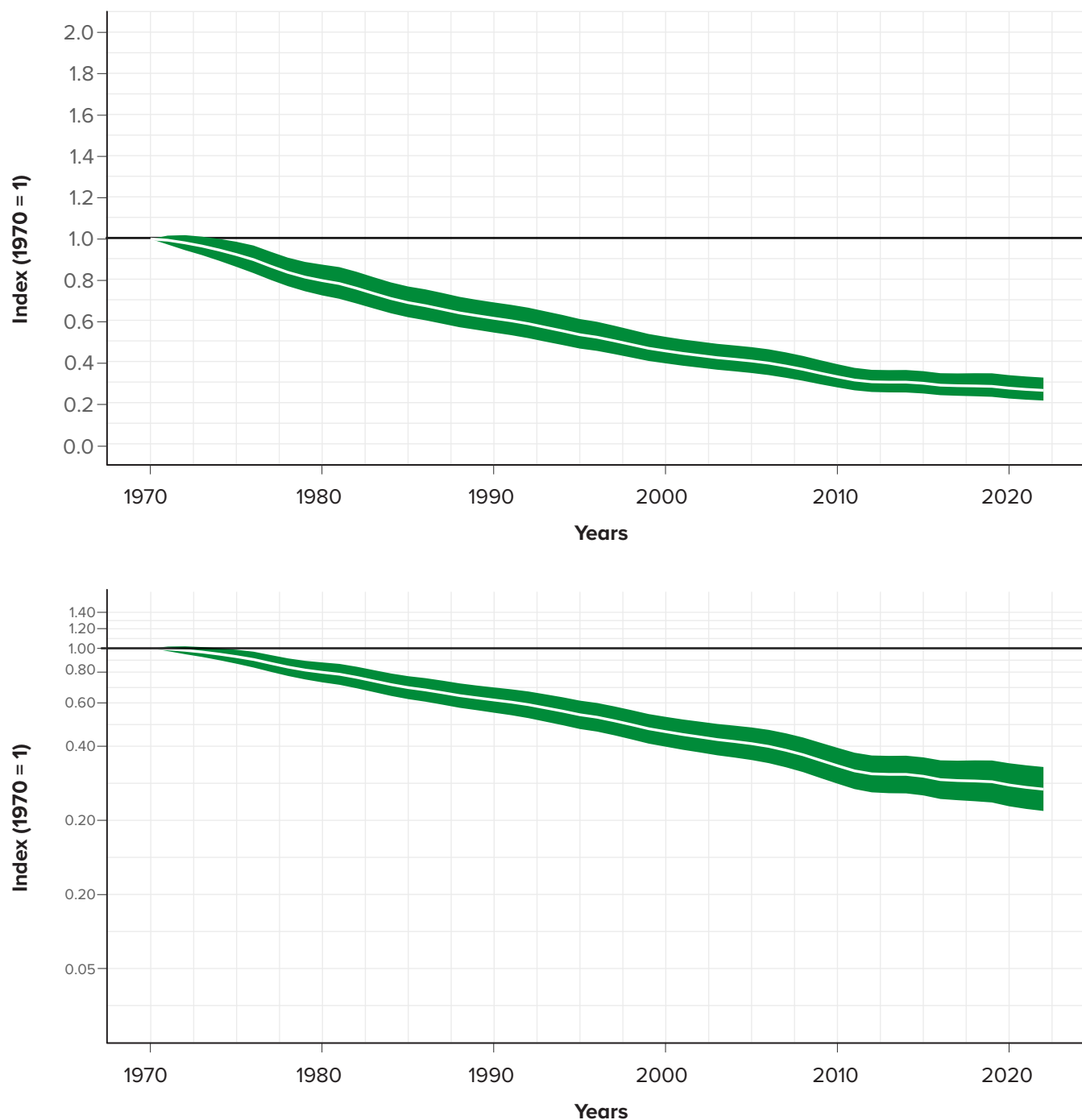


Figure 14. Comparison of plotting the 2026 smoothed global LPI on an arithmetic scale (top) vs logarithmic scale (bottom). The white line represents the index values, and the shaded areas represent the uncertainty around them.

4.3 Why we use a geometric mean

For the calculation of the LPI, a type of average known as the geometric mean is used. A number of scientific papers (Lamb *et al.*, 2009; van Strien *et al.*, 2012; Santini *et al.*, 2017) have considered how different indicators might best capture changes in biodiversity, and have concluded that the geometric mean of relative abundance is a particularly useful method of capturing important aspects of biodiversity change. Geometric means are routinely used for tracking growth rates, like population growth or interest rates, as they are designed to measure average proportional change. The geometric mean treats relative increases and decreases symmetrically (e.g. a doubling and a halving, indicated respectively by an index value of 2 and 0.5, where 1 indicates no change), can be easily calculated in log-space, and provides an appropriate method for aggregating multiplicative population change across populations.

4.4 Are highly weighted taxon-realm trends also more negative?

Applying taxon-realm level weightings to the LPI means that, if strong declines occur in taxonomic groups or areas that are rich in species, more weight will be attributed to these, resulting in an overall negative weighted average. This is an appropriate outcome of the weighted method as we are adjusting the index to be likely more representative of real-world patterns. Other lines of evidence show that threats to species are generally higher in tropical regions (IPBES, 2019), and these regions are also more biodiverse, so it is expected that the highly weighted trends may be more negative. **Figure 3** shows the proportion of populations that are increasing, decreasing or stable in the LPI dataset as a whole and by taxon. This categorisation is based on the total or overall change i.e. how much the population has changed over the whole monitoring period.

This is one way to describe the change occurring in that particular population or species. Another is to consider the average annual change, i.e. how much the population or species changes each year, on average. **Figure 15** shows the proportion of populations for each taxonomic group (mammals, birds, fish, and herptiles) in five categories of annual trends (strongly or moderately increasing or declining, and those showing little change). While the trends are relatively balanced, we generally see more strongly decreasing than strongly increasing trends. **Figures 16, 17 and 18** show a more in-depth breakdown of these patterns across taxa, realms and systems. Note how some of the largest proportions of strongly declining populations occur in highly biodiverse – and therefore heavily weighted – groups such as Neotropical amphibians and reptiles among terrestrial species, and Afrotropical fish among freshwater species.

It is important to note that within an LPI, individual population trends are never considered in isolation. Indices like the LPI are composite, meaning that population trends are averaged with other trends. The time period when an increase or decline occurs within a time-series can differentially impact the overall trajectory of the trend, as does how many species and populations contribute to the trend at that point in time. For example, when data are scarcer (e.g. towards the earlier or later years of an index) steep declines or sharp increases can have stronger impacts on the overall trend, as there may be fewer population time-series contributing at that time.

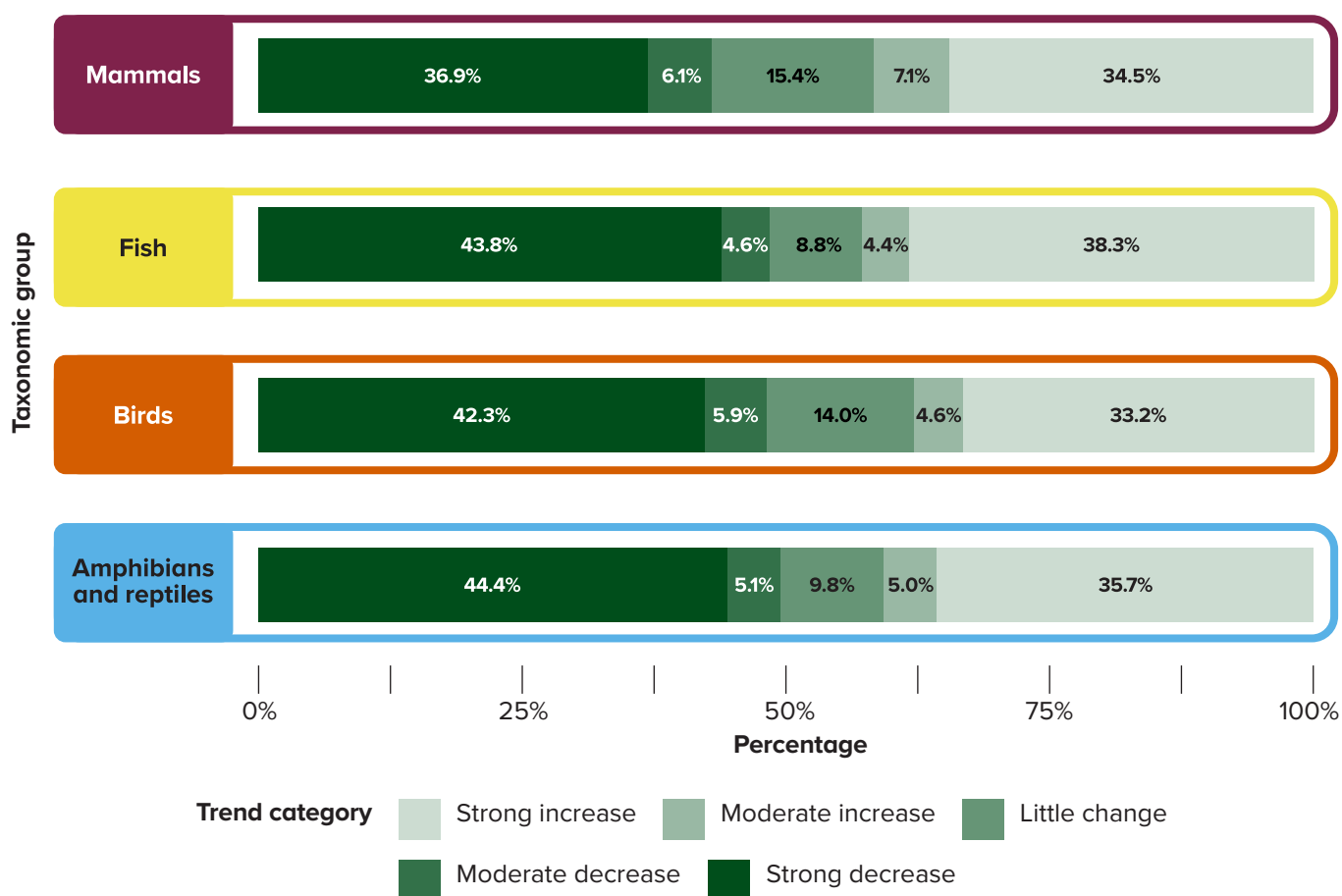


Figure 15. The percentage of species population trends by taxonomic group showing a strong or moderate increase or decrease, or little change. Categories are based on Burns *et al.* (2023) and describe an annual change greater than or equal to +2.81% (strong increase), between +1.16% and +2.81% (moderate increase), between -1.14% and +1.16% (little change), between -2.73% and -1.14% (moderate decrease), and less than or equal to -2.73% (strong decrease). Inset percentages highlight the proportion of trends within each taxonomic group in the shown categories.

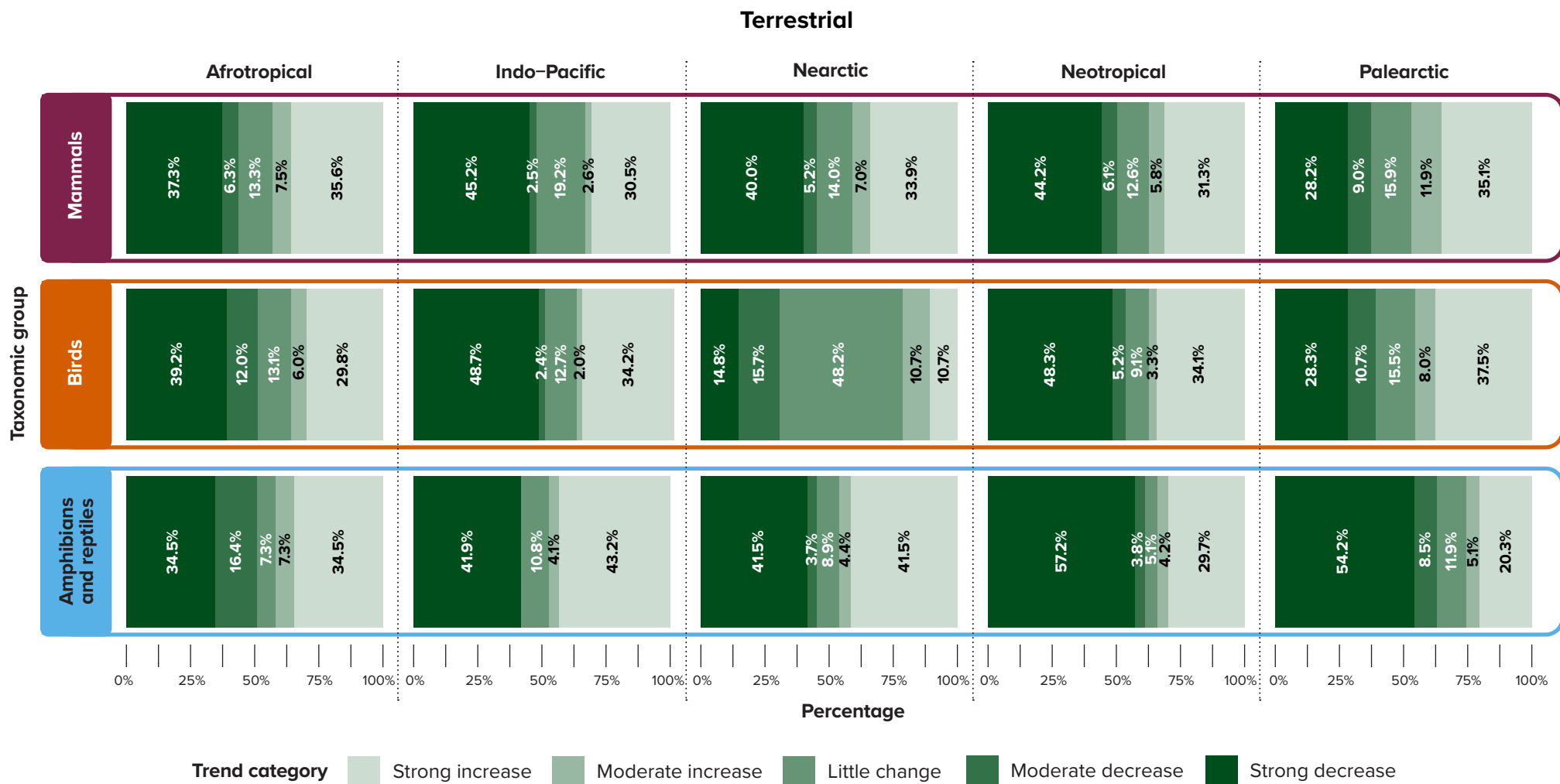


Figure 16. The percentage of species population trends by taxonomic group and biogeographic realm in the Terrestrial system showing a strong or moderate increase or decrease, or little change. Categories are based on Burns *et al.* (2023) and describe an annual change greater than or equal to +2.81% (strong increase), between +1.16% and +2.81% (moderate increase), between -1.14% and +1.16% (little change), between -2.73% and -1.14% (moderate decrease), and less than or equal to -2.73% (strong decrease). Inset percentages highlight the proportion of trends within each taxonomic group in the shown categories.

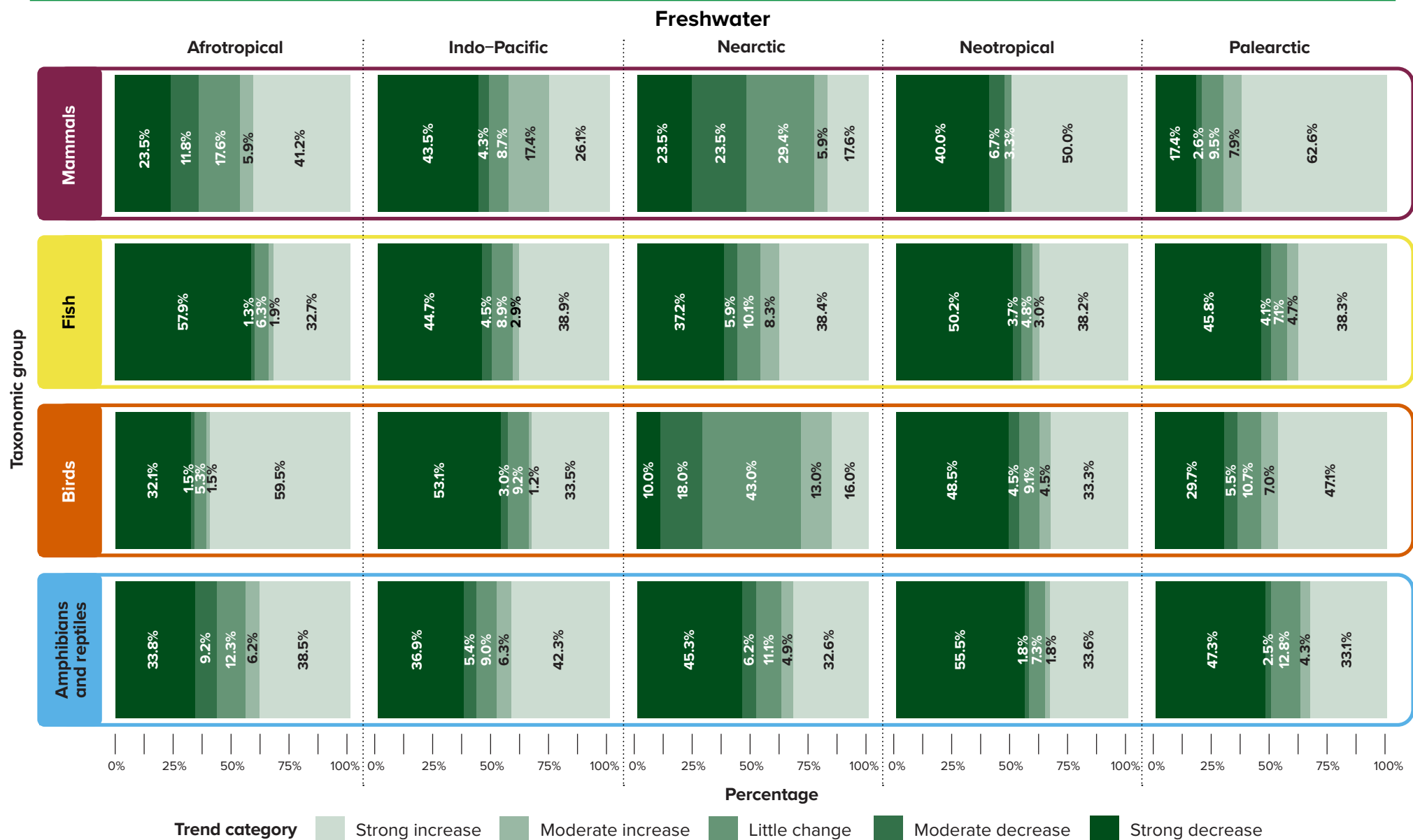


Figure 17. The percentage of species population trends by taxonomic group and biogeographic realm in the Freshwater system showing a strong or moderate increase or decrease, or little change. Categories are based on Burns *et al.* (2023) and describe an annual change greater than or equal to +2.81% (strong increase), between +1.16% and +2.81% (moderate increase), between -1.14% and +1.16% (little change), between -2.73% and -1.14% (moderate decrease), and less than or equal to -2.73% (strong decrease). Inset percentages highlight the proportion of trends within each taxonomic group in the shown categories.

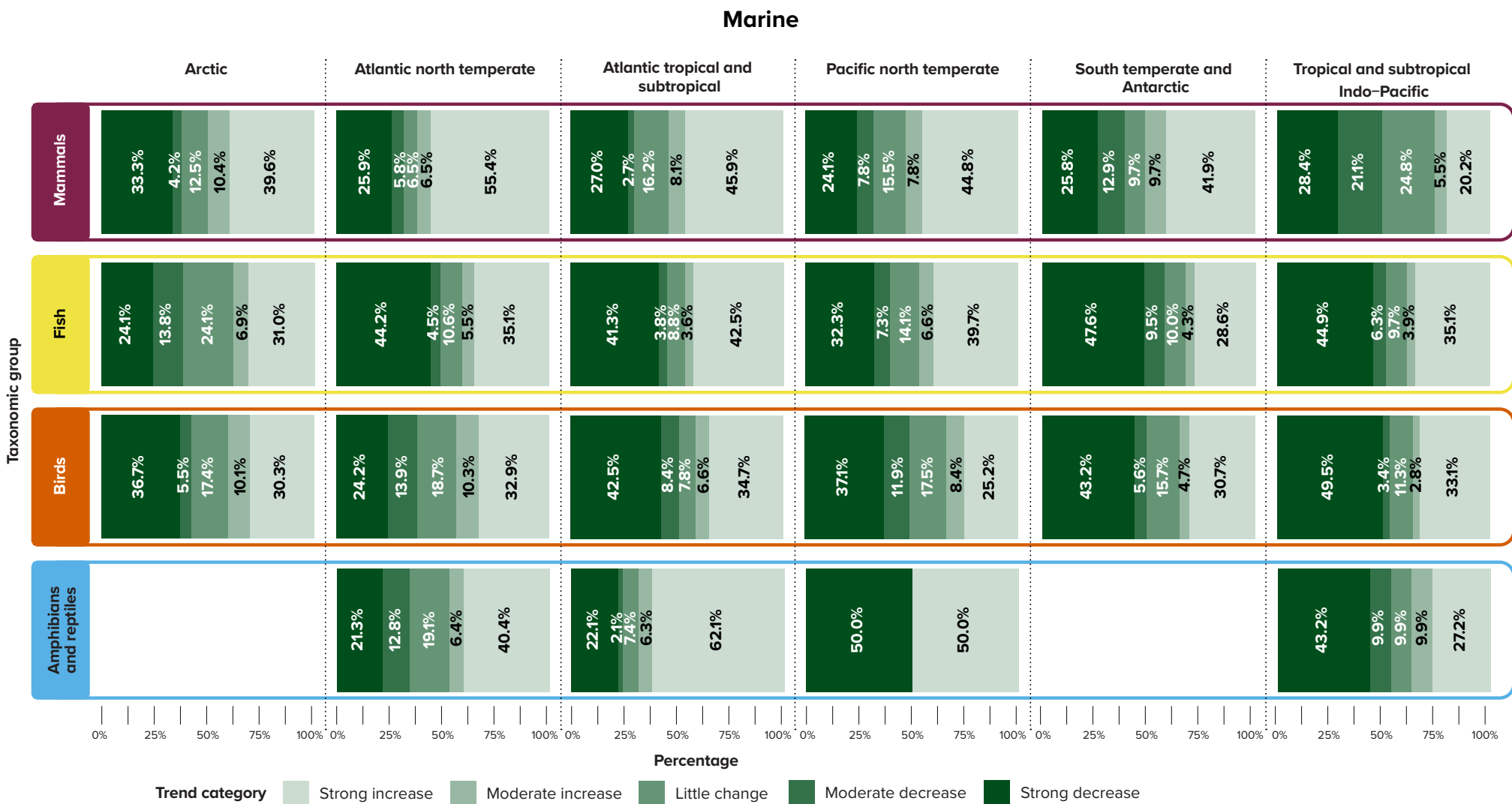


Figure 18. The percentage of species population trends by taxonomic group and realm in the Marine system showing a strong or moderate increase or decrease, or little change. Categories are based on Burns *et al.* (2023) and describe an annual change greater than or equal to +2.81% (strong increase), between +1.16% and +2.81% (moderate increase), between -1.14% and +1.16% (little change), between -2.73% and -1.14% (moderate decrease), and less than or equal to -2.73% (strong decrease). Inset percentages highlight the proportion of trends within each taxonomic group in the shown categories.

4.5 How the index is stress tested to check for robustness

Measuring how and why nature is changing across the globe is critical to its protection, but also inherently difficult due to the challenges of monitoring wildlife populations over prolonged periods of time. All indicators that track the state of nature at a global scale measure different facets of biodiversity, and they all show a decline. Each indicator, including the LPI, comes with its own set of caveats and sensitivities, which have been described in the scientific literature. To ensure each iteration of the LPI is as robust as it can be, the index is stress-tested, as reported below and on the [LPI website](#). Please note that the trends presented in this section are all unsmoothed (including the global trend) to allow for comparison between direct outputs of the sensitivity tests presented.

4.5.1 Sensitivity to outliers

The LPI can be sensitive to both extreme population increases and declines (Leung *et al.*, 2020). With each Living Planet Report, we test the index by recalculating it excluding both the most declining and increasing populations. This is to ensure the accuracy of the statistics, and to confirm that it is not driven by extreme declines or increases in species or populations. The populations removed during this stress-testing are not necessarily the same as those identified as having disproportionate effects on system or realm indices such as sudden short-term shifts in the trend trajectory (the latter are described in [section 3.2.3](#)). Outliers are not automatically removed from the trends as they represent valid data (as assessed through the checks carried out during data entry) and because they often come from underrepresented regions and taxonomic groups.

The results of the tests on the removal of extreme trends are presented in [Figure 19](#). This shows that the removal of 2.5% and 5% of the populations with the most positive and the most negative trends has a small positive effect on the global LPI. The removal of 10% of the most positive and the most negative trends among the LPI populations reduces the overall change in the LPI from -73% to -64%. The removal of values at both extremes lessens the decline for two reasons: firstly, the magnitude of the most negative trends exceeds the opposite magnitude of the most positive trends. Secondly, it is affected by the realms and taxonomic groups that the extreme trends occur in – if more of the negative trends are found in the higher weighted groups, and the most positive trends in the lower weighted groups, the net effect of removing extremes will be a positive shift in the index. [Figures 16, 17 and 18](#) show how the magnitude of population trends varies by taxonomic group and biogeographic realm. For a more in-depth explanation of these tests, see also this blog on the [ZSL website](#) which addresses this subject (but please note that this was written in 2020 and is based on an older version of the LPI dataset).

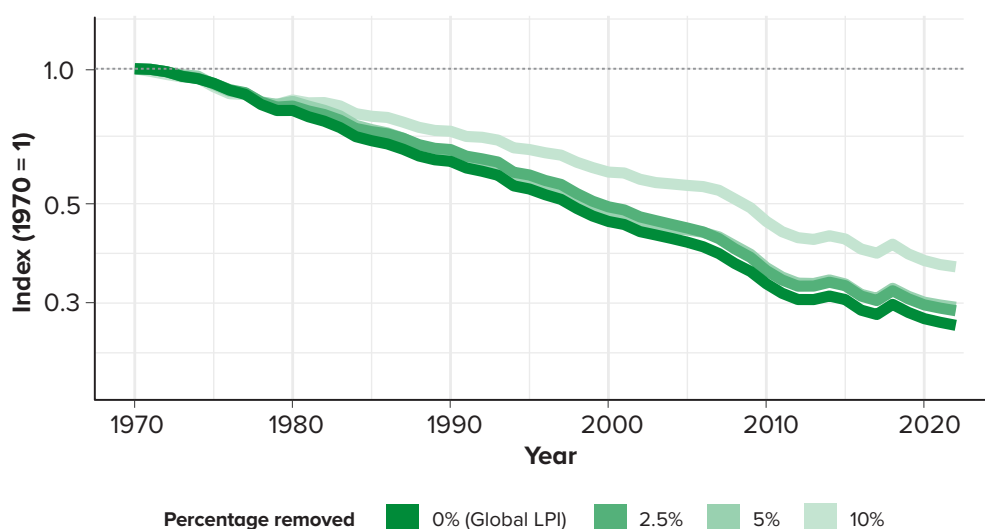


Figure 19. The effect of removing extreme trends on the global Living Planet Index for 1970 to 2022. Comparison of removing a proportion of the most declining and increasing trends in the dataset, and the global LPI trend (unsmoothed) for 1970 to 2022.

4.5.2 The effect of short and sparse time-series

The data included in the LPD are gathered from a variety of sources and collected at different scales. The time-series included in these data therefore vary in length (i.e. the interval between the first and the last observation) and fullness (number of observations in the time-series). While most birds and some mammals have – at least in some areas of the world – been monitored for longer as part of baseline monitoring programmes, for other species or groups only shorter time-series are available. Placing a strict threshold on the minimum length of the time-series or the minimum number of data points could therefore disproportionately impact some taxonomic groups, and often those that are already less well represented in the LPI (Marconi *et al.*, 2021). Amphibians, for example, are mostly represented in the database by shorter time-series (Figure 20). Disregarding this information could potentially lead to missing declines, which are vital from a conservation perspective.

A study compared trends detected from full time-series of bird abundance with those detected from degraded versions of the same time-series (Wauchope *et al.*, 2019). It found that, when a significant trend was detected in the degraded sample, it was likely to reliably indicate the direction (positive or negative) of the trend in the complete time-series. It remains to be tested if these results can be expanded to other taxonomic groups and types of data, but this nonetheless points to the fact that a decline detected in a short time-series is probably worth investigating to confirm the trend and potentially avoid further decline.

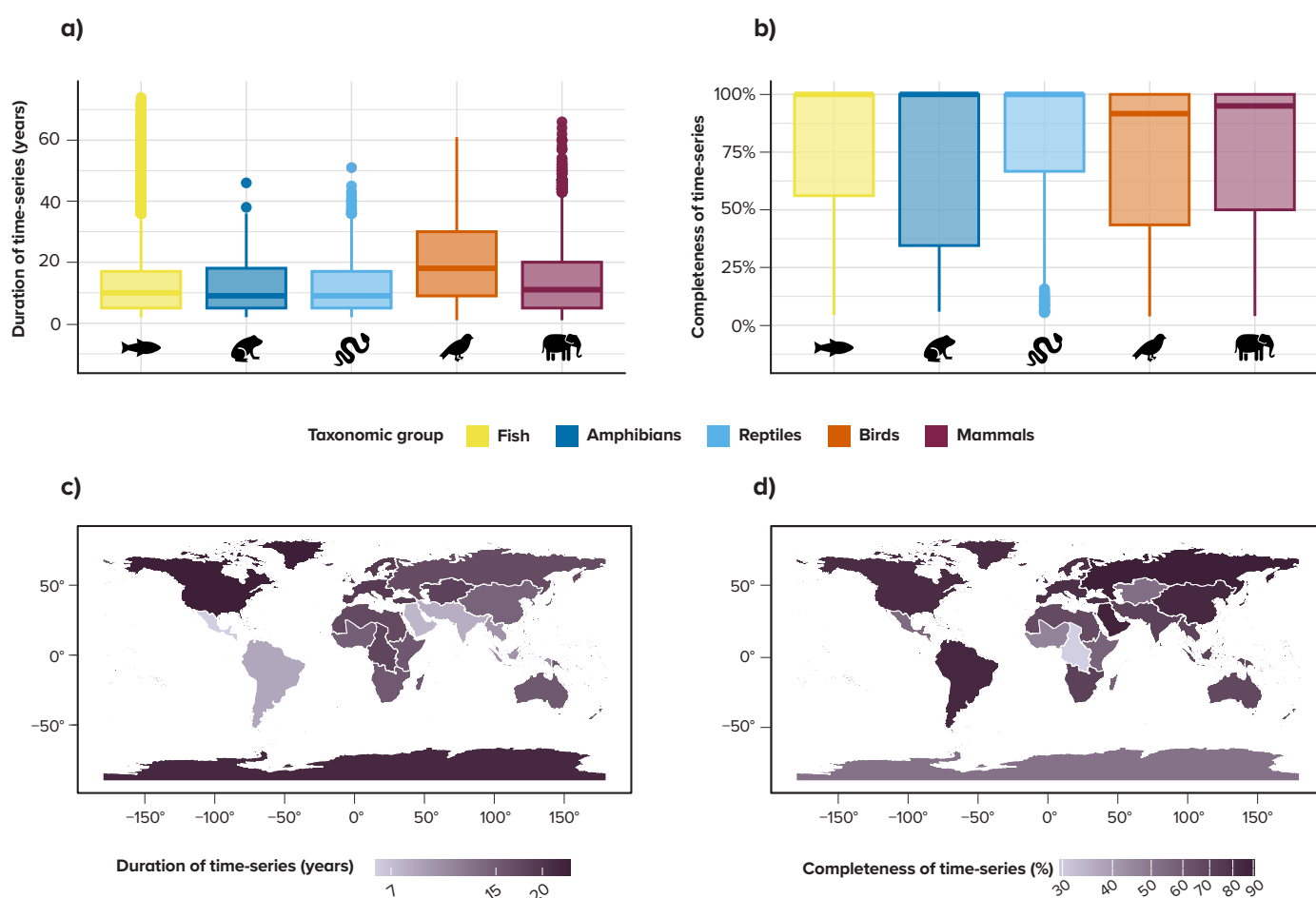


Figure 20. The length (the interval between the first and the last observation) and completeness (percentage of years with an observation) of time-series in the Living Planet Database, by taxonomic group (top) and region (bottom). Modified from Mével *et al.* (in prep).

To gauge the impact of short time-series and sparse time-series (time-series that cover a short period of time or that are comprised of a small number of data points) on the results of the global LPI, we recalculated the trend excluding these (**Figures 21 and 22**). The removal of a part of the dataset will inevitably result in a change in the overall trend. The removal of shorter time-series (**Figure 21**) causes the final index value to differ from the final value of the global trend by between 24 and 34 percentage points. The removal of sparse time-series has less of an impact on the trend, but still results in a more positive index (**Figure 22**). Setting the minimum number of data points for a time-series to be included to 3, 5 or 10 years leads to 21%, 39% and 60% of the dataset being removed.

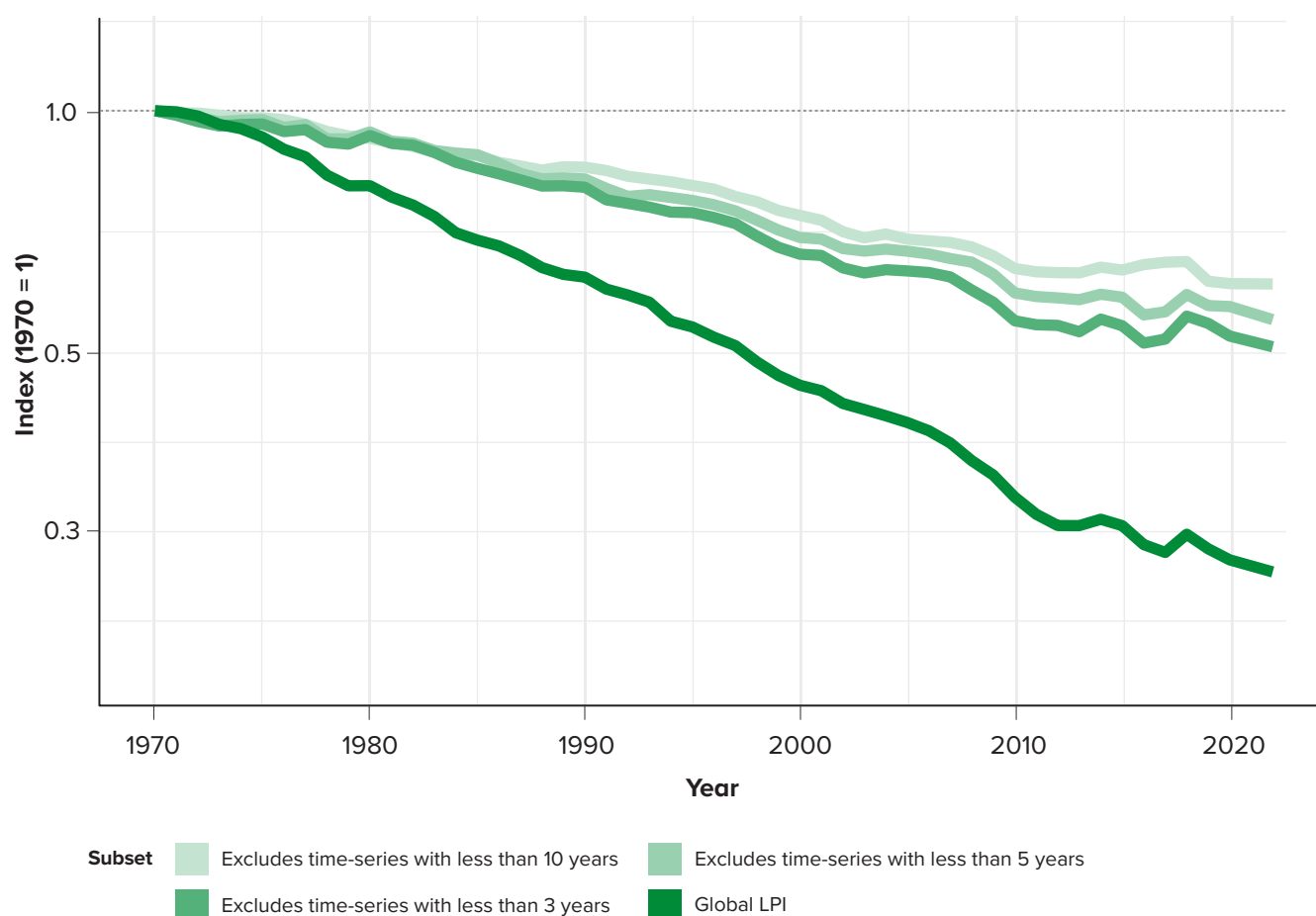


Figure 21. The effect of removing short time-series on the global Living Planet Index. Comparison of removing time-series with data covering less than 3, 5 and 10 years, and the global LPI trend (unsmoothed) for 1970 to 2022.

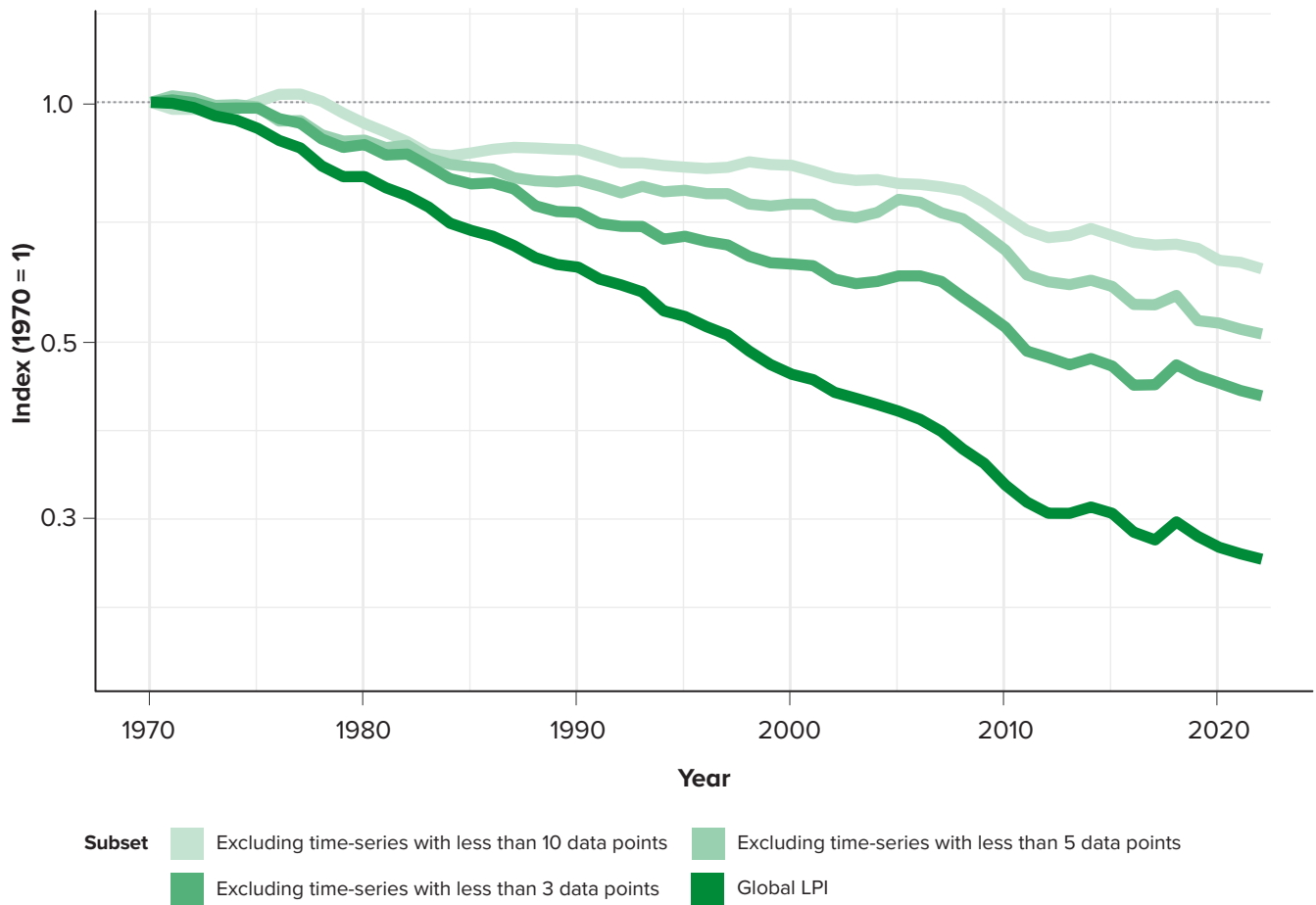


Figure 22. The effect of removing sparse time-series on the global Living Planet Index. Comparison of removing time-series with less than 3, 5 and 10 data points, and the global LPI trend (unsmoothed) for 1970 to 2022.

However, there are important considerations behind the methodological decision to include shorter and sparser time-series in the database and global analysis (based on discussions and testing during the over 25-year lifetime of the LPI; McRae *et al.*, 2025). These time-series are included in the LPI as they capture important information about population trends, often in underrepresented taxonomic groups. For example, a recent paper highlighting the decline in African savanna raptors (Shaw *et al.*, 2024) would have to be removed if population trends with two data points were automatically discounted – but this would take out an important insight into what is happening to 42 bird species in Africa, and the Africa LPI would lack key trends as a result. So, once the data quality checks described above (see [section 3.1](#)) have been carried out, the LPI team take a conservative approach to removing population data from the LPI, as good justification is needed for excluding valuable data from the final index.

4.5.3 How missing counts and extinctions are handled

Zero values occur in monitoring data for a variety of reasons; they can be missing counts, a sign of a population crashing to local extinction, or a pre-cursor to new immigration. During data entry into the LPD, we make sure that a value is entered as a zero only if monitoring was carried out and no individuals of that particular species were found. If no survey was carried out in a particular year, this will appear as a missing value in an LPI time-series. Although zero values are meant to indicate that the species was not observed in a specific year, this can also be the result of a missing observations. For example, failure to detect a species can result from very low abundance, or when a multi-species monitoring programme is not timed to the migration patterns of all species. Ideally, we would want to know the reason behind each zero value, and would treat zeros differently depending on what they represent. However, the information provided in the data source is not always sufficient to establish this with absolute certainty.

As the LPI calculation starts from the computation of an interannual growth rate $\log_{10}(N_{\text{year}+1} / N_{\text{year}})$, and this cannot be calculated if the population size is zero in one of the two years, zeros are replaced with a small value (1% of the population mean is added to all values within a time-series containing zeros). During the development stage of the LPI, tests were carried out to decide how to most appropriately deal with zero values, and this was the best identified approach (Loh *et al.*, 2005). This conservative approach assumes that the population is indeed changing, to ensure large increases and decreases in abundance are captured by the index, as they are important from a conservation perspective. However, as part of the sensitivity tests conducted at each iteration of the Living Planet Report, we also calculate the global trend by considering all zero values as missing values (**Figure A4**).

4.6 Why does the global LPI decline if most individual population changes are near zero?

As shown in **Figure 3**, the LPI data includes similar numbers of increasing or stable populations and declining populations. However, the global LPI shows a marked overall decline. This reflects a number of patterns in the data. We see more declines in some taxon/realms combinations that are weighted more heavily as they are more species-rich, like Neotropical amphibians and reptiles, and Afrotropical fish (**Figures 15-18**). Combined weighted trends are therefore more likely to show declines. Additionally, as the LPI is a cumulative index, the final values also reflect historical trends, so previous declines in a population will drive more negative final index values. This property of the index avoids some of the issues of “shifting baseline syndrome” meaning we will only see more positive index values if these previous declines are offset by true recoveries (Loreau *et al.*, 2022; Mehrabi and Naidoo, 2022). It is worth noting that the LPI still uses 1970 as a historical baseline, so cannot detect historical changes before that date.

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6. APPENDICES

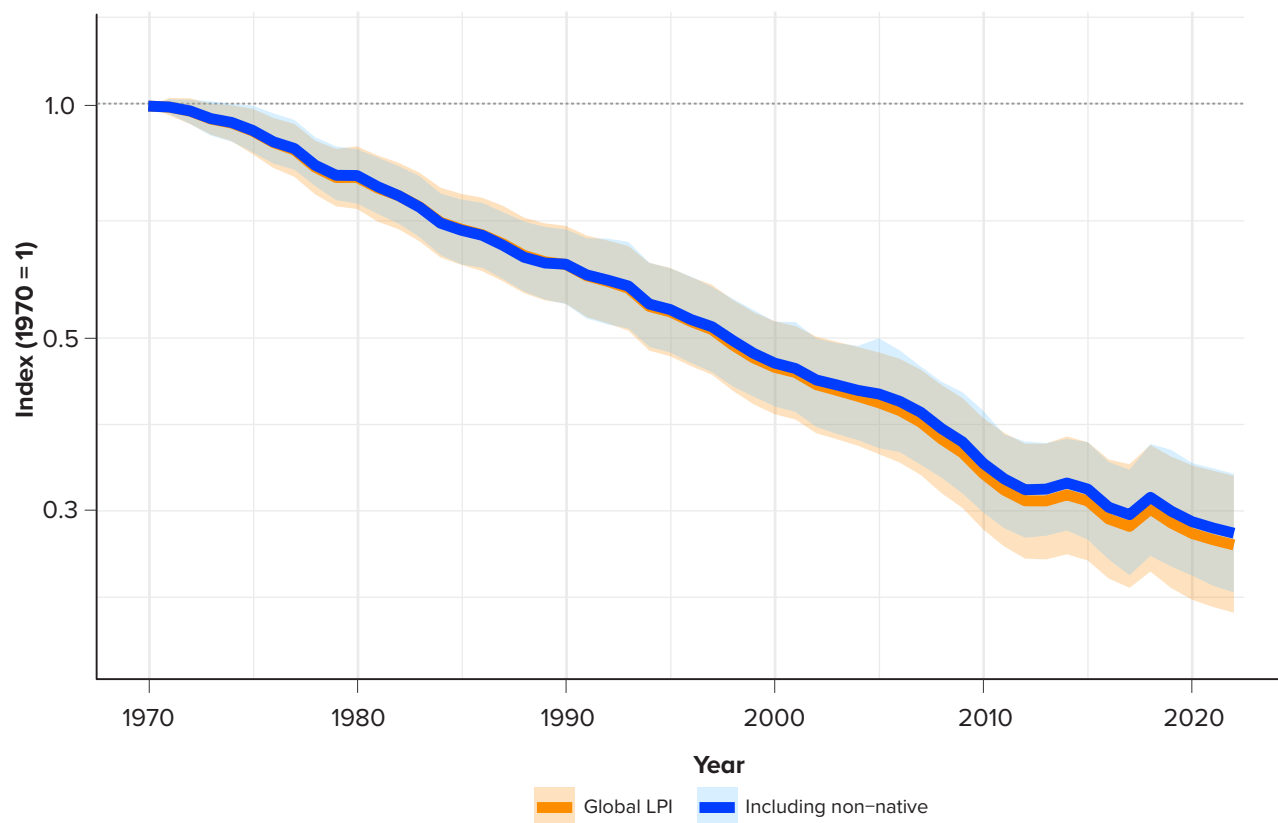


Figure A1. The global LPI 2026 (unsmoothed) with and without the inclusion of non-native species. The shaded areas represent the uncertainty around the index values.

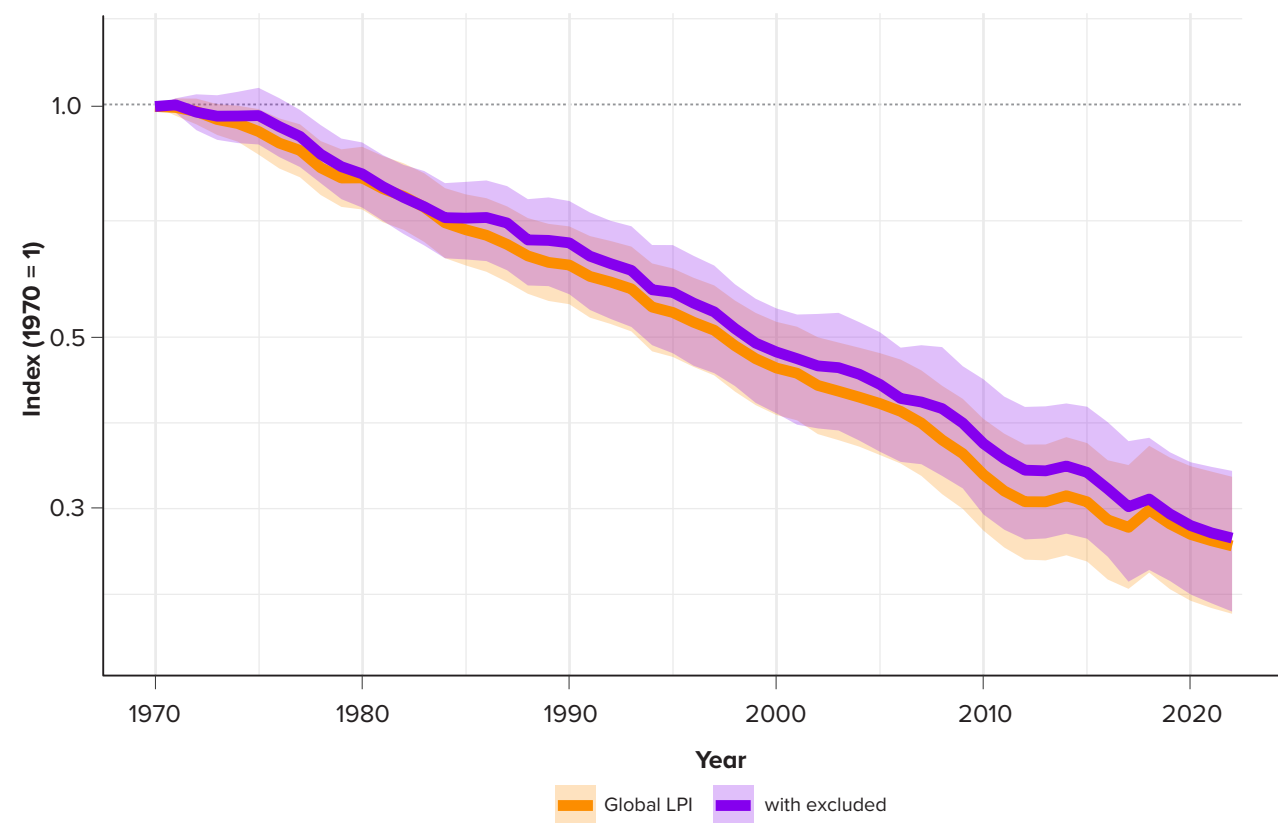


Figure A2. The global LPI 2026 (unsmoothed) with and without the inclusion of excluded populations. The shaded areas represent the uncertainty around the index values.

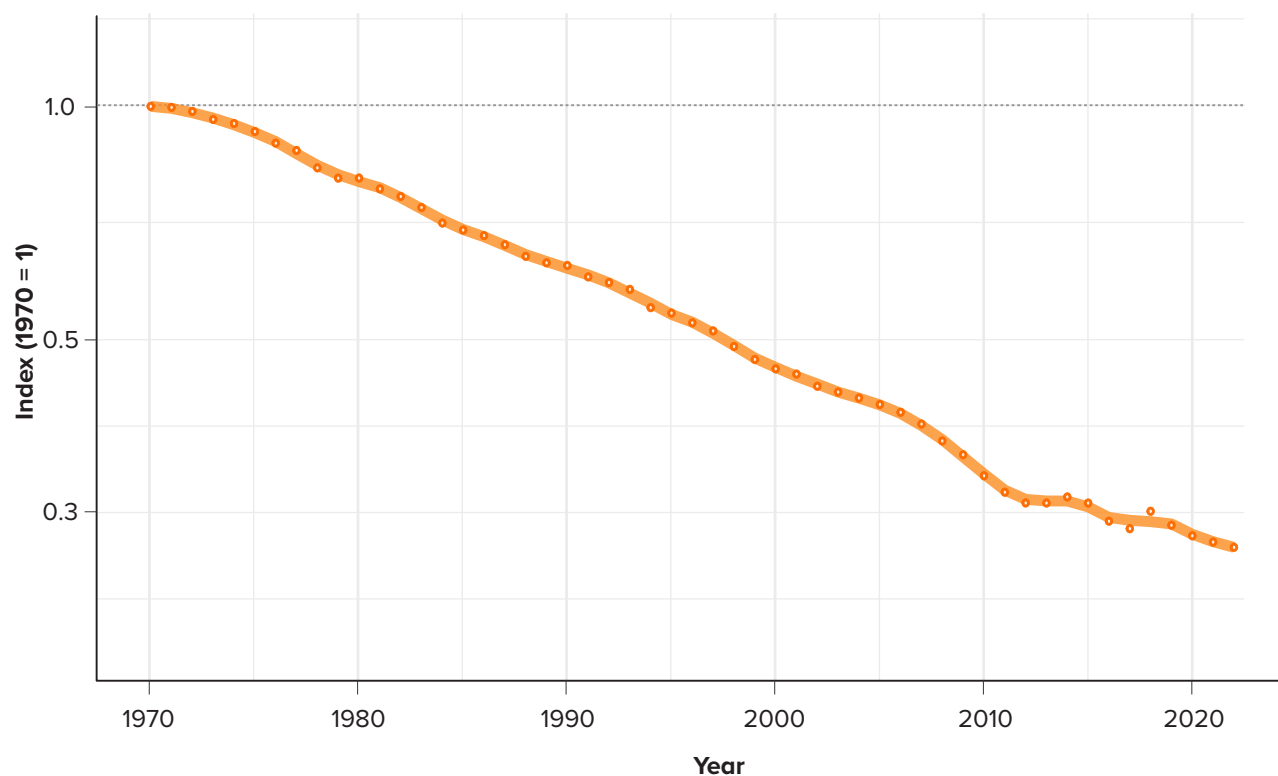


Figure A3. The global LPI 2026 smoothed (line) and unsmoothed (points).

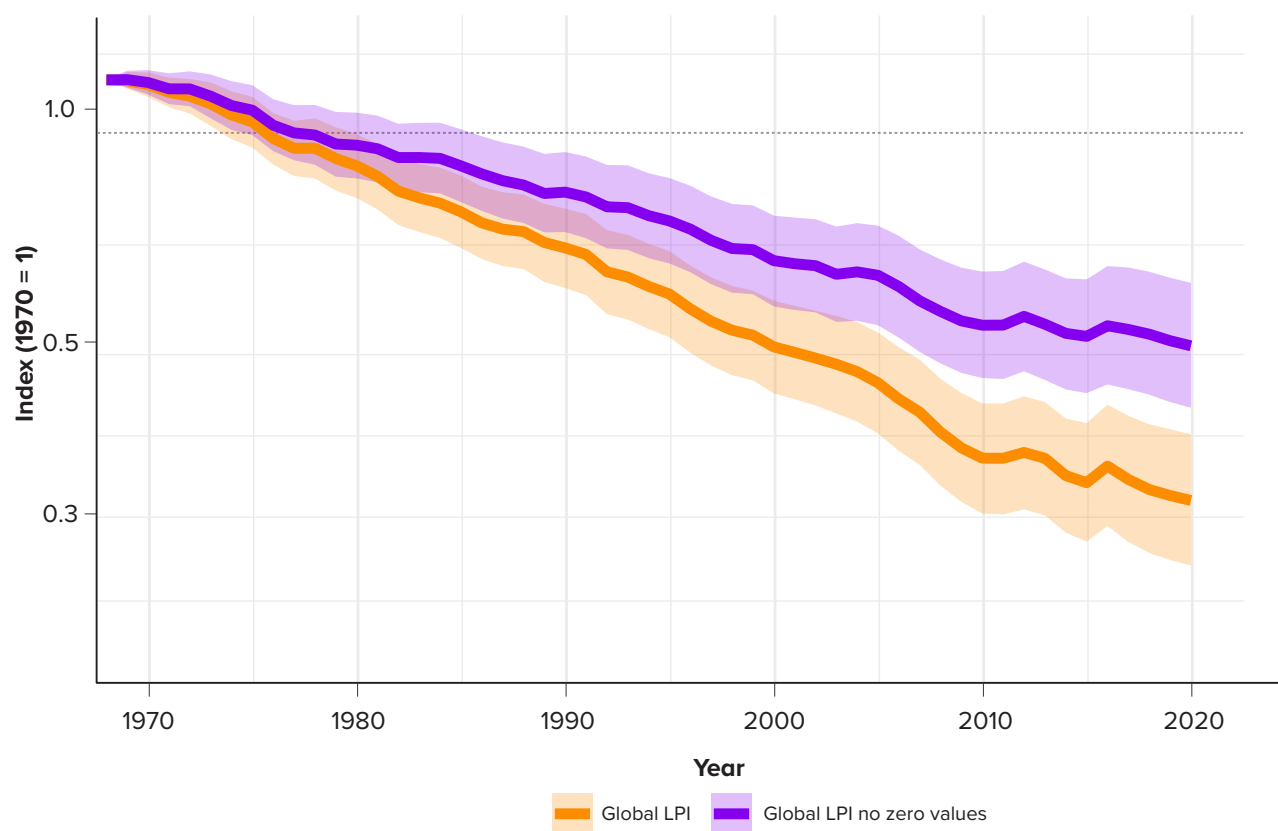


Figure A4. The effect of replacing zero values with NAs on the global Living Planet Index (unsmoothed) for 1970 to 2022.



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