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Article

Global conservation area coverage substantially exceeds current estimates

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Check for updates

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Conservation areas are critical for tackling the global environmental crisis[1]. These sites are reported as covering 18.5% of the terrestrial realm[2] and governments have committed through Global Biodiversity Framework Target 3 to increase this to at least 30% by 2030 (ref. 3). There are concerns that this potential near-doubling of conservation area coverage will negatively affect vulnerable people and over-stretch conservation resources[4]. However, nationally available datasets indicate that more conservation areas exist than are reflected in global figures[5–7]. We evaluated progress towards the area component of Target 3 using a globally representative sample across 25 countries and territories that incorporated these national datasets[8]. Extrapolating from this sample, we show that conservation areas likely already cover 26.81% of the terrestrial realm. We may be much closer to achieving 30% terrestrial coverage than previously thought. However, we also show that the extra land does not substantially address gaps in ecological representativeness, indicating that solely meeting the area component of Target 3 will do little to solve continuing global biodiversity loss. More focus and resources are needed to achieve the other components of the target, using a more strategic and inclusive approach to fill present gaps and produce equitable and effective conservation area networks.

Conservation areas, geographical spaces where human use and access are often limited[1], are widely adopted to reduce biodiversity loss, with 18.5% of the terrestrial realm now formally recognized for conservation[2]. Most of this conserved land is designated in protected areas (PAs), such as national parks and nature reserves[2]. More recently, governments have begun to formally recognize other effective area-based conservation measures (OECMs), a conservation area type that does not need to have conservation as its primary objective[9]. It is expected that many OECMs will be governed by private actors, Indigenous Peoples or local communities. In 2022, the 195 government signatories to the Convention on Biological Diversity agreed to increase PA and OECM global coverage to at least 30% by 2030 (ref. 3) (known as 30 × 30). This commitment is part of Target 3 of the Kunming-Montreal Global Biodiversity Framework (GBF), which also states these sites should be effectively managed, equitably governed, ecologically representative and well-connected[3].

The coverage component of GBF Target 3 is considered by some as controversial[4]. Proponents argue that at least 30% of the planet needs to be conserved to prevent major biodiversity loss[10,11]. Others highlight potential social, equity and food security impacts[12,13] and in

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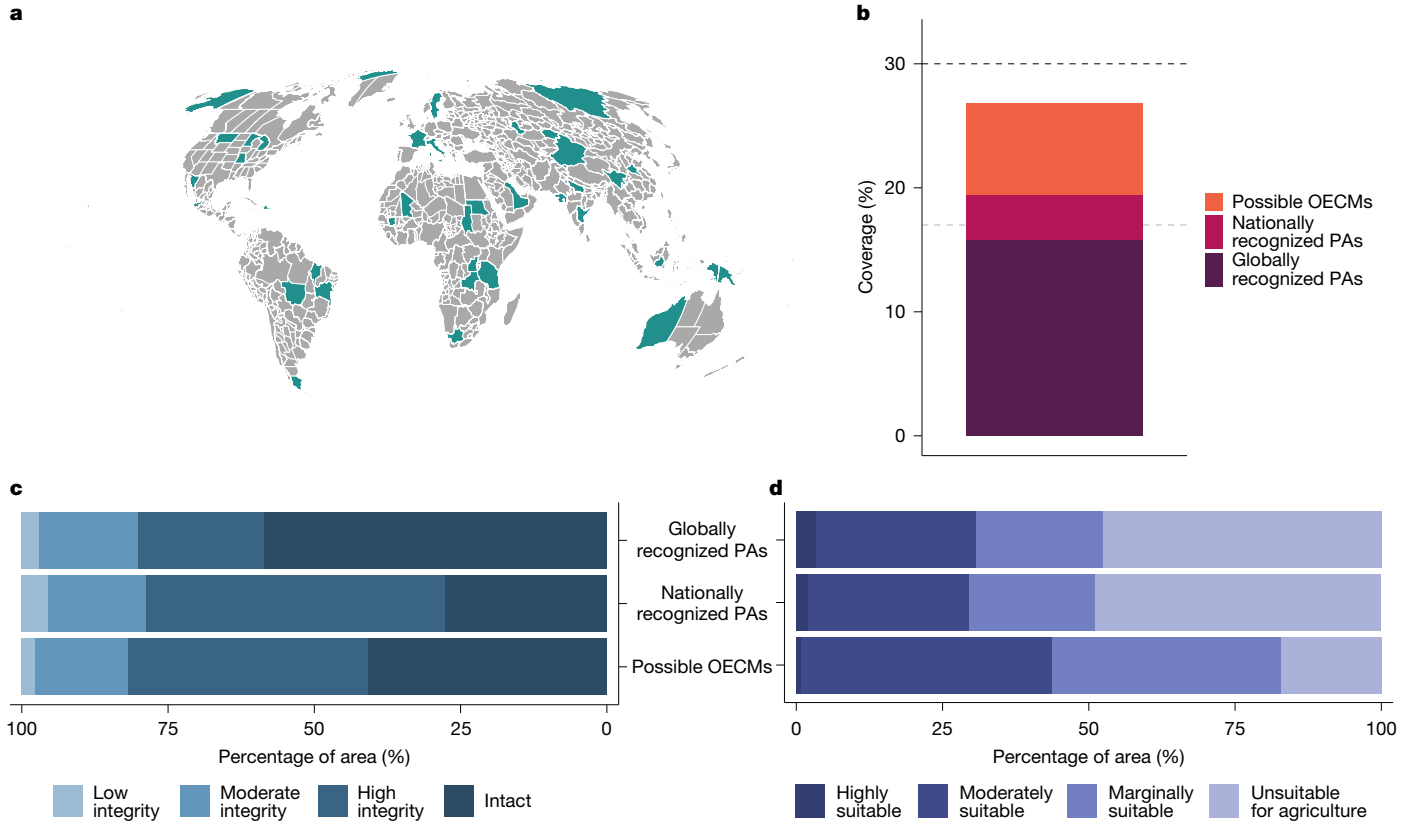


Fig. 1 | Global conservation area type coverage and characteristics. a, Set of 9 countries and territories, plus subnational sections of another 16 countries, from which all available terrestrial conservation area spatial datasets were collected and synthesized. Subsequent analyses were based on 1,000 sets of 100 km × 100 km sampling units; each set was in the area shown in green and met the 10% coverage targets for each of the features known to influence conservation area extent and global biodiversity patterns. **b**, Mean cumulative coverage of the three different conservation area types, based on combining several different international and national datasets, in the representative sample of land covering 10% of the terrestrial realm. The dotted lines show the 17% and 30% coverage values from previous and continuing global targets. **c**, Mean ecological integrity of land in the different conservation area types found in our sample, based on the EII dataset[28]. **d**, Mean agricultural suitability of land in the different conservation area types found in our sample, based on the Global Agricultural Land Resources dataset[29]. Base maps use United Nations ClearMap/Official United Nations Boundaries from the United Nations Geospatial Network. The designations employed and the presentation of material on the map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

some places the possible entrenching of top-down approaches led by governments and international donors[14–16]. There are also concerns that over-focusing on percentage coverage risks spreading conservation funds more thinly, perpetuating present under-resourcing of PAs[17] and undermining implementation and management effectiveness[4,18]. Conservation scientists are also concerned about repeating past mistakes, as present PA systems are generally fragmented and under-represent ecosystems with high economic value[19–21]. Target 3 and the broader GBF take these issues into account, but concerns remain about whether they will be given appropriate attention during implementation.

Present official coverage statistics indicate that meeting Target 3 will require conserving an extra 11.5% (15.5 million km^2) of the terrestrial realm[2]. Coverage statistics are derived from the World Database on Protected and Conserved Areas (WDPCA), available through the Protected Planet website[2]. This database tracks the implementation of Target 3, providing the headline indicator for the target. However, these official statistics chiefly comprise state-governed PAs because most nations only recently began to recognize, map and report on other conservation area types[9,22]. Yet, studies based on nationally available data indicate that substantially more land is managed for conservation than appears in official global statistics[5,7,23], much of which has the potential to be recognized as PAs or OECMs[16]. Moreover, these community-, Indigenous- or privately-governed lands can have better conservation outcomes than some state-governed PAs[24] and could improve ecological representativeness and connectivity of conservation area networks[5,6,25]. We therefore need a complementary approach to estimate global conservation area trends that can incorporate national-level datasets from a broader range of sources[8]. Collecting such data from every country would be extremely time-consuming, so a more rapid method is needed to complement official reporting.

Here we use an approach based on a sample that covers 10% of the terrestrial realm[8], designed to equally represent factors known to influence conservation area extent and global biodiversity patterns in the minimum number of countries and territories (Fig. 1a, Extended Data Figs. 1 and 2, Supplementary Fig. 1 and Supplementary Tables 1 and 2). We collected all the available conservation area data for this sample, finding two global datasets and 65 national and subnational datasets (Extended Data Tables 1 and 2). We then identified the conservation areas that fell in one of three categories (Box 1): (1) globally recognized PAs from the WDPCA in May 2022 (the dataset used to inform the GBF discussions), (2) nationally recognized PAs and (3) possible OECMs. For OECMs, we measured possible (not actual) coverage because in most countries the processes for formally recognizing them have only just begun. Instead, we identified existing conservation areas under long-term governance and management that could possibly be recognized as OECMs in future[7], if requested by the people governing these

Box 1

Conservation area type definitions

Our classification was based on information from the WDPA and WD-OECM. These were merged in November 2025 to produce the WDPCA. Supplementary Methods gives IUCN definitions.

(1) Globally recognized PAs: sites presently included in the WDPA with a status of inscribed, adopted, designated or established (that is, not sites that are proposed or not reported).

(2) Nationally recognized PAs: sites that have not been reported to the WDPA but meet one or both of the following criteria: (i) the IUCN definition of a PA; and (ii) national-level definitions of a PA.

(3) Possible OECMs: sites that have not been reported to the WD-OECM but meet all the following criteria: (i) not a PA; (ii) a geographically defined area with agreed and demarcated boundaries; (iii) governed by a specified entity or group; (iv) governance is likely to be sustained into the indefinite future; (v) under a management regime that contributes to in situ conservation, regardless of intention; and (vi) contains important biodiversity values.

sites and approved by the relevant national authority[26]. We analysed the data on these three conservation area types, compared this with the corresponding WDPCA data, conducted sensitivity analyses (Supplementary Figs. 2 and 3) and extrapolated likely global conservation area coverage. We present our results at the global level to avoid contradicting official country-level reports and to maintain the confidentiality of unofficial data sources.

Conservation area coverage

Globally recognized PA coverage in our sample was 16.15% (s.d. = 0.275), very similar to the official 2022 WDPCA measure of 15.79% coverage[27]. Assuming the same accuracy for the other conservation area types, for which equivalent datasets are not available, we multiplied all estimates by the ratio of official to sampled globally recognized PA coverage (mean ratio = 0.978, s.d. = 0.017).

We estimate that 26.81% (s.d. = 0.239%) of the terrestrial realm was in some type of conservation area in 2022 (Fig. 1b and Extended Data Table 3): 15.79% in globally recognized PAs, plus our estimate of 3.64% (s.d. = 0.132%) in nationally recognized PAs and 7.38% (s.d. = 0.150%) in possible OECMs. As most nationally recognized PAs are likely to qualify for globally recognized PA or OECM status[26], our data indicate that we may only be 3.2% short of achieving 30% coverage. Although our sample only covered 10% of the terrestrial realm, these results are consistent with evidence from national studies[5–7] and strongly indicate that present debates and analyses underestimate the global area of land already under conservation.

Conservation area characteristics

We extracted information from two global spatial datasets to compare the characteristics of the three conservation area types in our sample[28,29] (Methods and Supplementary Methods). Globally recognized PAs, nationally recognized PAs and possible OECMs had similarly high levels of ecological integrity[28], although globally recognized PAs had the highest proportion of ecologically intact land (Fig. 1c and Supplementary Table 3). This similarity indicates that continuing processes to identify OECMs could result in many important sites being given international recognition. Only 2.5% of land found in the three conservation area types was highly suitable for agriculture[29] (Fig. 1d and Supplementary Table 4), although possible OECMs had much more moderately suitable agricultural land than PAs. Some possible OECMs will probably support livelihoods through the low-level use and trade of natural resources, while maintaining important biodiversity values[16].

Representativeness

We investigated the ecological representativeness of the different conservation area networks by first measuring coverage of the six terrestrial functional biomes[30] found in our sample (Fig. 2a). The polar or alpine biome had by far the highest conservation area coverage, which has been widely reported elsewhere and explained in terms of the low economic opportunity costs of protecting such land[10,31,32]. There was substantial variation in the percentage of the different conservation area types covering each biome, with conservation areas in the possible OECM category having a particularly important role for tropical or subtropical forests, as well as savannas and grassland[5].

We also measured ecological representativeness at the ecoregion scale[33], determining the percentage of the area of each ecoregion in our sample found in the three conservation area types. This probably under- or over-estimated global coverage for some ecoregions but is indicative of wider trends. We calculated the percentage coverage of each ecoregion for three conservation area networks: (1) globally recognized PAs, (2) all PAs, by adding nationally recognized PAs, and (3) all conservation area types. We then calculated their protection equality values (Methods, Supplementary Methods and Extended Data Table 4), which range between 0 and 1, scoring 1 for conservation area networks containing an equal percentage of each ecoregion[34]. The globally recognized PAs had a protection equality score of 0.405 (s.d. = 0.0059), showing their low representativeness. Adding the other conservation area types into the network only increased this to 0.505 (s.d. = 0.0053), leaving it still relatively unequal.

To understand these protection equality patterns, we grouped ecoregion percentage coverage data into categories that reflect past, present and proposed international targets (Fig. 2b). We found that of the median 173 ecoregions in each sample, 80 had less than 10% coverage in globally recognized PAs. This decreases to 64 ecoregions when including all PAs and 51 when including all conservation area types. In terms of those ecoregions having at least 30% coverage, 43 would meet this target based on globally recognized PA data, 52 based on all PAs and 80 based on all conservation areas. This explains why the protection equality scores remain low when including the other conservation area types.

The low representativeness result for the globally recognized PAs and all PAs combined was expected (Fig. 2b), as previous research has shown that these sites are often located on economically marginal lands in remote and/or upland areas[31,32] and expanding coverage often leads to more of the same ecoregions being protected[19,35]. Adding possible OECMs did little to improve this representativeness, as they are largely found in the same ecoregions and possibly influenced by similar economic factors[36]. Some of these areas have high species richness and endemism[5,10], so conserving them will be important for meeting several GBF targets[3]. However, our results indicate that recognizing them as OECMs may do relatively little to achieve the ecological representation component of Target 3.

Conservation implications

GBF Target 3 was intended as an ambitious response to the continuing biodiversity crisis[37]. However, our findings indicate that we could be closer to meeting the 30% coverage component on land than previously thought, with our estimate showing 19.43% of the terrestrial realm in some type of PA and a further 7.38% with the possibility of being recognized as OECMs. Moreover, this is probably an underestimate, as some

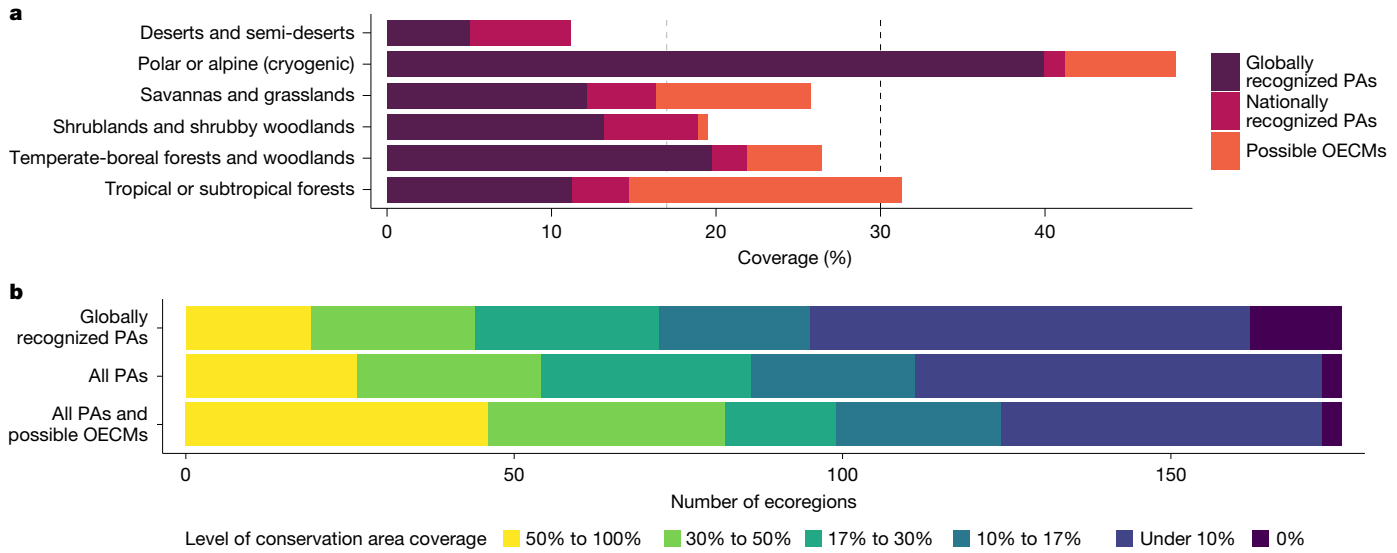


Fig. 2 | Ecological representativeness of the different conservation area types. a, Mean percentage of the six terrestrial functional biomes[30] covered by the three conservation area types in a representative sample of land covering 10% of the terrestrial realm. **b**, Mean number of ecoregions[33] belonging to different categories of conservation area coverage in the representative sample, showing coverage based on globally recognized PAs, all PAs (globally recognized PAs + nationally recognized PAs) and all conservation areas (globally recognized PAs + nationally recognized PAs + possible OECMs). The analysis only includes ecoregions with more than 10% of their coverage in the sampling region. The conservation area coverage categories are based on past and present global coverage targets used in policy, including the 17% coverage component of Aichi Target 11 and the 30% coverage component of the GBF Target 3 (shown with dotted lines), as well as the 50% target proposed by the Half-Earth project. All the biome and ecoregion analyses were based on 1,000 sets of 100 km × 100 km sampling units, where each set was in the same 25 countries and territories and met 10% coverage targets for each of the features known to influence conservation area extent and global biodiversity patterns.

nations lack the capacity to map their conservation areas[22]. Despite this conservation area coverage being much higher than past estimates, alarming amounts of biodiversity loss continue[38]. One likely reason is that the extra conserved land we identify often covers ecoregions that are already well represented in globally recognized PAs[10]. This leaves many other ecoregions under-represented (Fig. 2). Our results also illustrate the disconnect between conservation area coverage and nature recovery, emphasizing the need to increase PA and OECM management effectiveness by developing, funding, implementing and monitoring improved strategies and actions that account for diverse socio-ecological contexts[39,40].

As well as maintaining and improving existing sites[41], designating more conservation areas will be necessary to achieve the ecological representativeness components of Target 3. This will have to be done as efficiently as possible, given it is likely that more than a quarter of the terrestrial realm is already conserved. These extra PAs and OECMs will need to account for how the land is used presently and its cultural significance for local peoples, be based on diverse and equitable approaches to conservation[42,43] and seek to minimize their effect on food security and sustainable trade[20]. This expansion should be informed by systematic conservation planning[44], which can account for trade-offs between conservation and other societal goals, and should underpin both national- and local-level spatial planning[45], targeting resources to establish and support PAs and OECMs in priority areas[18,46].

The requirement for equitable conservation means that OECMs and more diversified PA governance arrangements could play a major role in meeting Target 3, as these frameworks could provide recognition to groups, including Indigenous Peoples and local communities, who govern substantial portions of the world but are under-represented in formally recognized PA networks[13]. According to our estimates, 7.38% of the terrestrial realm has the possibility to be recognized as OECMs, although it is important to stress that these areas are not at present included in official global coverage statistics. The process of formal OECM recognition is at an early stage, and its success depends on governments developing effective identification, implementation and funding approaches[26]. Crucially, the recognition of OECMs will depend on the free, prior and informed consent of those governing and stewarding each area, some of whom may be sceptical about the benefits and wary of potential restrictions, resulting from this type of official recognition[47]. Overcoming such obstacles will be important, as many countries contain large areas governed by Indigenous Peoples and local communities in ways that benefit biodiversity[15,48], so there are clear advantages to governments creating a range of mechanisms that empower and formally recognize these broader forms of stewardship[49]. Continued donor investment will be essential, helping governments to implement these mechanisms and directly supporting the custodians of these important lands.

Large parts of the world are probably already managed in line with PA and OECM definitions but are not reported at the international level. Measuring progress towards GBF Target 3, and conservation area coverage more broadly, depends on collecting and using accurate and relevant data on the locations, effectiveness and governance of all conservation area types[8,21,50]. The official globally recognized datasets will continue to play a vital, central role in informing and monitoring progress[22]. Nonetheless, our study shows the benefits of a complementary approach that incorporates more national-level datasets to estimate the effect of officially recognizing further conservation areas. This needs to be based on a diverse set of data sources for the terrestrial and marine realms, with strengthened global capacity to ensure robust reporting from government and non-state actors[7,16,50]. These data will help to ensure that the international community and national groups can empower the myriad of people who steward their lands, producing the effective and equitable network of conservation areas on which nature depends.

Online content

Any methods, additional references, Nature Portfolio reporting summaries, source data, extended data, supplementary information, acknowledgements, peer review information; details of author contributions

and competing interests; and statements of data and code availability are available at https://doi.org/10.1038/s41586-026-11157-4.

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Methods

Selection of sample area

Our analysis built upon a previous study[8] that identified 10% of the terrestrial realm for use in measuring conservation area coverage and ecological representativeness, while minimizing the number of countries selected to reduce subsequent data collection effort (Extended Data Fig. 1a and Supplementary Discussion). This first involved identifying ten factors that drive conservation area extent and global biodiversity patterns. These were (1) biomes, (2) elevation, (3) government effectiveness, (4) income per capita, (5) islands and continents, (6) landcover, (7) latitude, (8) population density, (9) realms and (10) subregions (Supplementary Methods). Each factor was then subdivided into several 'features' (Supplementary Table 1). For factors based on categorical data, each category was used as a different feature, for example, income per capita was divided into the World Bank categories: (1) low income, (2) lower middle income, (3) upper middle income and (4) high income[8]. For factors based on continuous data, each category was divided on the basis of appropriate break points in the data, for example, government effectiveness was based on dividing the World Bank government effectiveness scores into four features using the following values[8]: (1) 0 < 25, (2) 25 < 50, (3) 50 < 75 and (4) 75 < 100. This produced 89 features, which were mapped from the best available datasets[8].

The previous study used the Marxan software package to identify a sample that covers 10% of the global extent of each of the 89 features[8], so the influence of the different factors was in proportion to that experienced at the global scale. The 10% coverage target was chosen on the basis of a sensitivity analysis to find a balance between the area selected and number of countries and territories included in the sample[8]. Marxan uses a simulated annealing algorithm, which involves running the software several times and producing a near-optimal output from each run. The Marxan analysis was done in two stages (Supplementary Methods) and both stages involved 1,000 runs. Stage 1 treated every country/territory as an analysis unit, apart from countries with a land area >1,000,000 km^2, which were divided into units based on their highest subnational administrative level (for example, states and provinces). This stage identified the best of the 1,000 outputs, that is, the one that contained the fewest countries and territories needed to meet all the 10% global coverage targets (Fig. 1a). Stage 2 was designed to remove superfluous land from the stage 1 countries and territories, thus reducing coverage of each feature to as close to 10% as possible to balance out their influence. This involved dividing the stage 1 countries and territories into a series of 100 km × 100 km sampling units and using Marxan to identify near-optimal sets of sampling units that met all the 10% global coverage targets while minimizing the area selected. For our work, we used the 1,000 outputs from the stage 2 analysis (Extended Data Fig. 2), so that we could calculate the conservation area coverage for each different set of sampling units with associated uncertainty estimates.

Conservation areas dataset

We collected the available conservation area data for our focal sample of 25 countries and territories from several sources. The WDPCA is the official dataset for measuring global PA coverage[2] and was launched in 2025, on the basis of combining the pre-existing World Database on Protected Areas (WDPA) and World Database on OECMs (WD-OECM). We downloaded PA boundary data for each country and territory in our sample area in May 2022 (there were no OECMs listed in our sample area by May 2022), so our data were extracted from the WDPA. We followed the recommended method for calculating PA coverage[51]; we removed United Nations Educational, Scientific and Cultural Organization (UNESCO) Man and Biosphere Reserves (MAB) sites, as well as areas with the status of 'proposed' and 'not reported'. The PA spatial data consisted of 36,835 boundary polygons, 138 point locations with an areal extent and 1,077 point locations without an areal extent. For point data with an areal extent, a circular buffer was drawn around the point, equating to the reported area; point locations without area data were removed. We then combined the buffered point data and polygon data into a single spatial data layer for each country and territory.

As mentioned, MAB sites are removed from WDPA coverage calculations because the data do not distinguish between core, buffer and transition zones[51]. To include MABs in our analyses, we mapped sites using available information from the UNESCO website[52], which lists point coordinates and the size of core, buffer and transition zones. For each of the MABs where suitable data exist, we produced a circular buffer around the point coordinates to produce a core zone of the listed area. We excluded data on buffer and transition zones based on expert feedback that these zones do not meet the criteria for the conservation area categories defined earlier (Box 1).

Additionally, we downloaded publicly available national/regional conservation area spatial data for each country in the sample (Extended Data Tables 1 and 2). These included national PA databases, community conservation areas and any other area type that may be managed in a way that conserves biodiversity. We also asked conservation scientists and practitioners with expertise on conservation area types and designations in our sample countries to send us any other relevant spatial datasets. We wanted our analysis to be based on as complete a set of conservation area data as possible. However, some of this information is politically sensitive, especially data on conservation area boundaries, so these datasets were shared on the understanding that we would not publish the raw spatial data, summarize results at the national level or make these datasets publicly available. We also ensured that expert input at the later stage of our analysis was anonymized. Ethics approval for these processes was granted by the University of Kent Faculty of Social Sciences Research Ethics Advisory Group for Human Participants (ID 20221648467987119). In total, our analysis was based on 2 publicly available global datasets, 14 publicly available national datasets from 5 countries and 51 national datasets from 16 countries and territories that are not publicly available (Extended Data Tables 1 and 2).

Categorizing the conservation area dataset

Our analysis focused on PAs and OECMs and developed three conservation area categories to describe them (Box 1), based on the International Union for Conservation of Nature (IUCN) and Convention on Biological Diversity (CBD) definitions that underpin work to measure progress towards achieving GBF Target 3 (Supplementary Methods) and the metadata of the spatial datasets we collected. We then classified each conservation area in our dataset into one of the three categories or, if an area did not meet the criteria of any of the definitions, we removed it from the dataset. We did this by first producing a provisional classification for each conservation area based on its metadata. We then put these provisional assessments for each sample country in an online form and asked local experts to check, correct and comment on the classifications. Where there was disagreement among the experts about how conservation areas should be categorized, the majority response was used. If the responses were tied, a working group of six of the co-authors made the final decision (as described in the Supplementary Methods, we did a sensitivity analysis to test the effect of this decision-making process and found that the results were robust to change). In general, all the conservation areas with the same national designation were classified into the same conservation area category. However, the experts identified some exceptions and used the available data to identify which sites should be assigned to a different category (Supplementary Methods). The specific details we accounted for are described in more detail in the following sections.

Category 1 are globally recognized PAs. Category 1 consists of all conservation areas included in the WDPCA with a status of inscribed, adopted, designated or established[2], that is, those PAs that meet the criteria specified in the recommended method for calculating PA coverage[51].

Category 2 are nationally recognized PAs. These are sites that are not in the publicly available WDPCA but are included in national databases and meet the IUCN definition of a PA, as assessed by relevant experts using the available metadata, peer-reviewed evidence and local knowledge. The absence of these sites from the WDPCA can be due to: (1) delays in national agencies sending updates about new sites[53]; (2) countries placing restrictions on the public availability of their data[2]; or (3) when the national legislation of a particular country does not recognize specific PA governance types[7], for example, sites that are privately owned and governed[22].

Category 3 are possible OECMs. For this category we needed to make clear from the definition that we were identifying areas where there is the possibility of a site being counted as an OECM in the future. The process of designating an area as an OECM and listing it on the WDPCA takes time as it entails an in-depth assessment of the management, governance and biodiversity values of each individual site and crucially requires the group governing the site to consent to the area being listed[26]. Our possible OECMs definition was based on translating the IUCN site-level tool for identifying OECMs[54] into six components that could be applied by national experts. The six components and how we assessed them are listed below:

(1) Not a PA. We did not include sites that could be classified as globally recognized PAs or nationally recognized PAs.

(2) A geographically defined area with agreed and demarcated boundaries. We only used spatial datasets with demarcated boundaries produced by relevant government agencies or groups responsible for governing, managing and/or supporting the sites.

(3) Governed by a specified entity or group. This was assessed by relevant experts on the basis of the available metadata, peer-reviewed evidence and local knowledge.

(4) Governance is likely to be sustained into the indefinite future. This was assessed by relevant experts on the basis of the available metadata, peer-reviewed evidence and local knowledge.

(5) Under a management regime that contributes to in situ conservation, regardless of intention. This was assessed by relevant experts on the basis of the available metadata, peer-reviewed evidence and local knowledge.

(6) Contains important biodiversity values. This was assessed by relevant experts on the basis of the available metadata, peer-reviewed evidence and local knowledge. We used a broad interpretation of 'important biodiversity values' because although this wording is used in the IUCN site-level identification tool[54], the OECM definition only specifies that sites should have 'long-term outcomes for the in situ conservation of biodiversity'. Thus, we retained all sites that included natural greenspace, even if the site was designated for another reason, for example, protecting built heritage.

Spatial analyses

Preparation for analysis. All analyses and data processing were conducted in R v.4.2.1[55] and QGIS v.3.16.3[56]. All datasets were reprojected to Mollweide equal area projection, with the analyses conducted in this projection unless otherwise stated. To prevent double counting, we used the st_difference function in the sf package[57] in R to remove duplicates and overlaps across the different datasets. As part of this, if a polygon was represented in several datasets or if there were overlapping polygons that belonged to more than one conservation area type, we assigned that area to the lowest numbered type (Box 1), that is, if a site was a globally recognized PA but overlapped with a site identified as a possible OECM, then the area of overlap would be categorized as a globally recognized PA. This ordering reflects level of recognition and permanence.

Conservation area coverage statistics. Using the combined conservation area dataset, we assessed the extent of each conservation area type in each of the 100 km × 100 km sampling units. We then used the results to determine the percentage coverage of each of these conservation area types for each of the 1,000 sets of sampling units[8] (Extended Data Fig. 2). The mean globally recognized PA coverage for these sets was 16.15%, slightly higher than the 15.79% global coverage from the WDPCA in May 2022 (ref. 27). Given the contentious nature of debates around 30 × 30, we decided to counterbalance the impact of the slightly higher globally recognized PA coverage in our sample. We did this by adjusting each of the 1,000 sets by dividing the 15.79% WDPCA value by the globally recognized PA percentage coverage value of the set. For each set, we then multiplied the conservation area extent result by the adjustment value, so that the percentage coverage of globally recognized PAs equalled that of the reported global coverage from the WDPCA and the other conservation area types had the same proportional adjustment (Extended Data Table 3).

Finally, we calculated the adjusted mean percentage coverage and s.d. for each of the three conservation area types in each of the 1,000 sets of sampling units (Extended Data Fig. 1b and Extended Data Table 3). We then assumed that these percentages calculated from our sample equalled those of the whole terrestrial realm. We made this direct extrapolation because each set was designed using the Marxan software to be representative of the terrestrial realm (Extended Data Fig. 2, Supplementary Fig. 1 and Supplementary Tables 1 and 2), based on containing 10% of the total extent of each of the spatial features that are known to influence conservation area coverage (Extended Data Fig. 1b). It should be noted that because these 1,000 sets were selected to be representative, the sampling units they contain are more similar than if chosen at random (Extended Data Fig. 2), so the s.d. values calculated from these sets are relatively low.

Ecosystem integrity. To evaluate the present status of the ecosystems in the different conservation area types, we used the Ecosystem Integrity Index (EII) dataset[28]. The EII is a metric that accounts for the structural, functional and compositional integrity of ecosystems, with each 1 km × 1 km pixel given a value of between 0 and 1 according to the lowest integrity score for each of the three components. We categorized the EII into quartiles (low, $0 < 0.25$; moderate, $0.25 < 0.5$; high, $0.5 < 0.75$; and intact, $0.75 < 1$) and for each of the 1,000 sets of sampling units intersected it with the conservation area dataset. From this, we determined the mean percentage of each conservation area type covered by each of the EII quartiles across all sets.

Agricultural suitability. To investigate the level of pressure that areas may come under for land conversion, and potential food security impacts, we also calculated the agricultural suitability of land in the different conservation area types in the 1,000 sets of sampling units. We based this on the Global Agricultural Land Resources dataset, covering 1980 to 2009[29] and grouped the values into four categories (unsuitable, 0; marginally suitable, 1–32; moderately suitable, 33–74; and highly suitable, 75–100) based on the classification system developed by ref. 58. As with the ecological integrity analyses, for each of the 1,000 sets of sampling units we ascertained the percentage of each agricultural suitability category in each conservation area type and then calculated the mean across all sets.

Ecological representativeness. We measured the ecological representativeness of the different conservation area types in each of the 1,000 sets of sampling units based on their coverage of different biomes and ecoregions. GBF Target 3 does not specify how much of each biome or ecoregion should be conserved to achieve ecological representativeness, partly because their biodiversity values vary widely[59]. Nevertheless, these statistics are widely reported because they give an indication of the distribution of coverage, helping to identify biomes and ecoregions with high or low representation[60]. We did not measure

the extent to which the different conservation areas overlapped with Key Biodiversity Areas, even though GBF Target 3 refers to conserving 'areas of particular importance for biodiversity'[3,61]. This is because Key Biodiversity Areas are generally assessed at the national level and some countries have yet to assess their sites for a range of taxonomic groups using the revised Global Standard[62]. Thus, although our sample of countries and territories was selected to represent broad biogeographic patterns, it may not be representative of Key Biodiversity Area assessment patterns.

Our analyses were based on the Terrestrial Ecoregions of the World dataset[33]. For each of the 1,000 sets we assessed the total area of each ecoregion in our sampling units and the percentage of this in each of the conservation area types. These percentage values were adjusted using the same approach used to produce the conservation area coverage estimates described earlier, that is, for each set the ecoregion area per conservation area type was divided by the globally recognized PA percentage coverage of the set and multiplied by the 15.79% WDPCA value. We removed the lake, rock and ice, and mangrove ecoregions to account for spatial mismatches between country and ecoregion boundaries (following ref. 34).

We used this adjusted ecoregion dataset to calculate the total area of each biome in our sampling units and the total area in each conservation area type. To do this, we assigned each of the ecoregions found in the 1,000 sets of sampling units to its most relevant terrestrial functional biome (Supplementary Table 5). We based this on the Global Ecosystem Typology functional biome classification[30], as this has been designed to measure progress towards GBF targets. We used this to calculate the percentage coverage of each conservation area type in each biome.

We also used the adjusted ecoregion dataset to analyse ecoregion protection equality and coverage in relation to past, present and potential international coverage targets. As a first step, we removed ecoregions with less than 10% of their extent found in our sample area, leaving us with a median 173 ecoregions in each set of sampling units (Supplementary Table 6). We did this on the basis of a sensitivity analysis that investigated the extent to which small ecoregion patches that barely overlap with the sampling units would bias the results (Supplementary Methods). Such bias is possible because these small patches are more likely to be completely outside or completely in the conservation area network, thus appearing to have very low or very high levels of percentage conservation area coverage.

Protection equality is a metric based on the Gini coefficient that has been widely used to measure the evenness of protection across ecoregions[34,63]. We calculated the level of proportional protection equality across the different terrestrial ecoregions of the world[33], based on the mean values for each of the 1,000 sets of sampling units, using the ProtectEqual package in R[64]. These calculations were conducted iteratively (Extended Data Table 4), beginning with only the globally recognized PAs, then all PAs (globally recognized PAs + nationally recognized PAs) and finally all conservation areas (globally recognized PAs + nationally recognized PAs + possible OECMs).

To measure ecoregion coverage in relation to international commitments, we produced six percentage coverage groups (0% to represent no coverage; 10% based on the 2010 CBD Biodiversity Target goal 1; ref. 60; 17% based on the 2020 CBD target[65]; 30% based on the 2030 CBD target[3]; 50% based on the recommendations of the Half-Earth project[66]; and 100% to represent complete coverage). We then counted the number of ecoregions belonging to each group on the basis of adding the three conservation area types incrementally to the global conservation area network. It is important to note that these calculations were based on the adjusted areas of each ecoregion in our sample, meaning that some estimates of conservation area coverage may under- or over-represent global levels. However, as our sample included 173 ecoregions, the results we present are probably indicative of global patterns.

Reporting summary

Further information on research design is available in the Nature Portfolio Reporting Summary linked to this article.

Data availability

The sources of all the publicly available conservation area data are described in the Article and its Supplementary Information, as are the datasets used to measure the ecological characteristics and representativeness of the three conservation area types. The conservation area coverage results for the 1,000 sets of sampling units, as well as an example dataset based on publicly available data that illustrates how we produced the conservation area results, are available via figshare at doi: 10.6084/m9.figshare.33263898. Source data are provided with this paper.

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Author contributions R.J.S. and Z.G.D. conceived the idea for the project and developed the conceptual framework. J. Beeken and H.M.K.O. collated data. H.M.K.O. and R.J.S. developed the analytical framework. H.M.K.O. conducted all the analyses. H.C.B., Z.G.D., R.E.G.K., Y.H., H.M.K.O., R.J.S. and J.L.S. developed the conservation area type definitions, interpreted the results and led on writing the paper. A.M.A., J. Beeken, J. Beltran, J.W.B., S.C., N.D., C.E., J.A.F., S.H., C.N.J., C.J., Y.M.L., A.B.M., D.M., G.M., J.M., M.M., A.A.M., Y.P., B.P., F.R., R.R., S.S.S., D.P.S., M.T., C.T., K.W., J.W. and S.Z. provided data, helped to interpret the results and gave feedback on drafts of the paper. All authors commented on and agreed with the final version of the paper.

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Competing interests The authors declare no competing interests.

Additional information

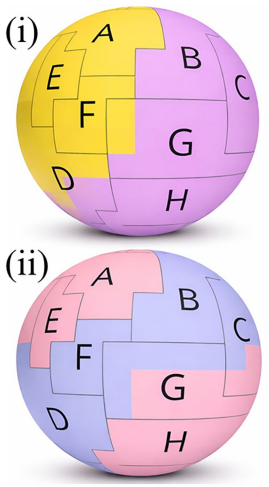
Supplementary information The online version contains supplementary material available at https://doi.org/10.1038/s41586-026-11157-4.

Correspondence and requests for materials should be addressed to Robert J. Smith.

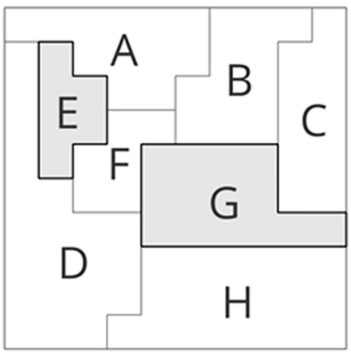
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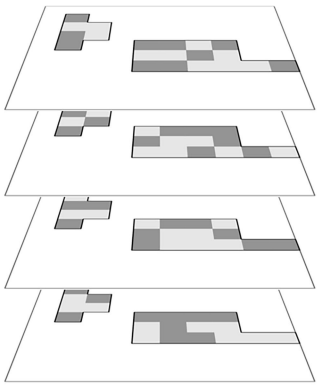
a) Sykes et al (2024) Sampling methodology



Select factors that are drivers of conservation area coverage and biodiversity patterns (i and ii), map their four constituent features (■ ■ ■ ■) and calculate the extent of each feature in each of the countries (A to H).



Stage 1 prioritisation: Select smallest set of countries that contain at least 10% of the extent of each of the four features (countries E & G selected).

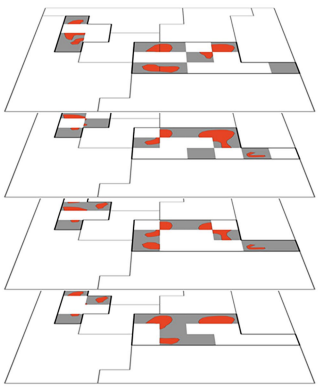


Stage 2 prioritisation: Identify 1,000 near-optimal sets of 10,000 km^2 sampling units within the selected countries that contain at least 10% of each feature (four sets shown here for illustration).

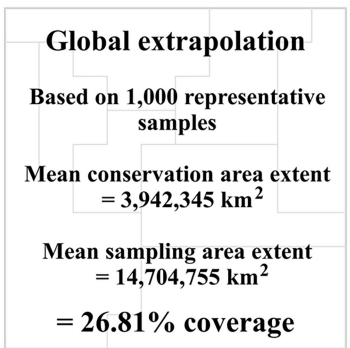
b) Extrapolation process



Collect conservation area data for the representative sample of countries (countries E & G).

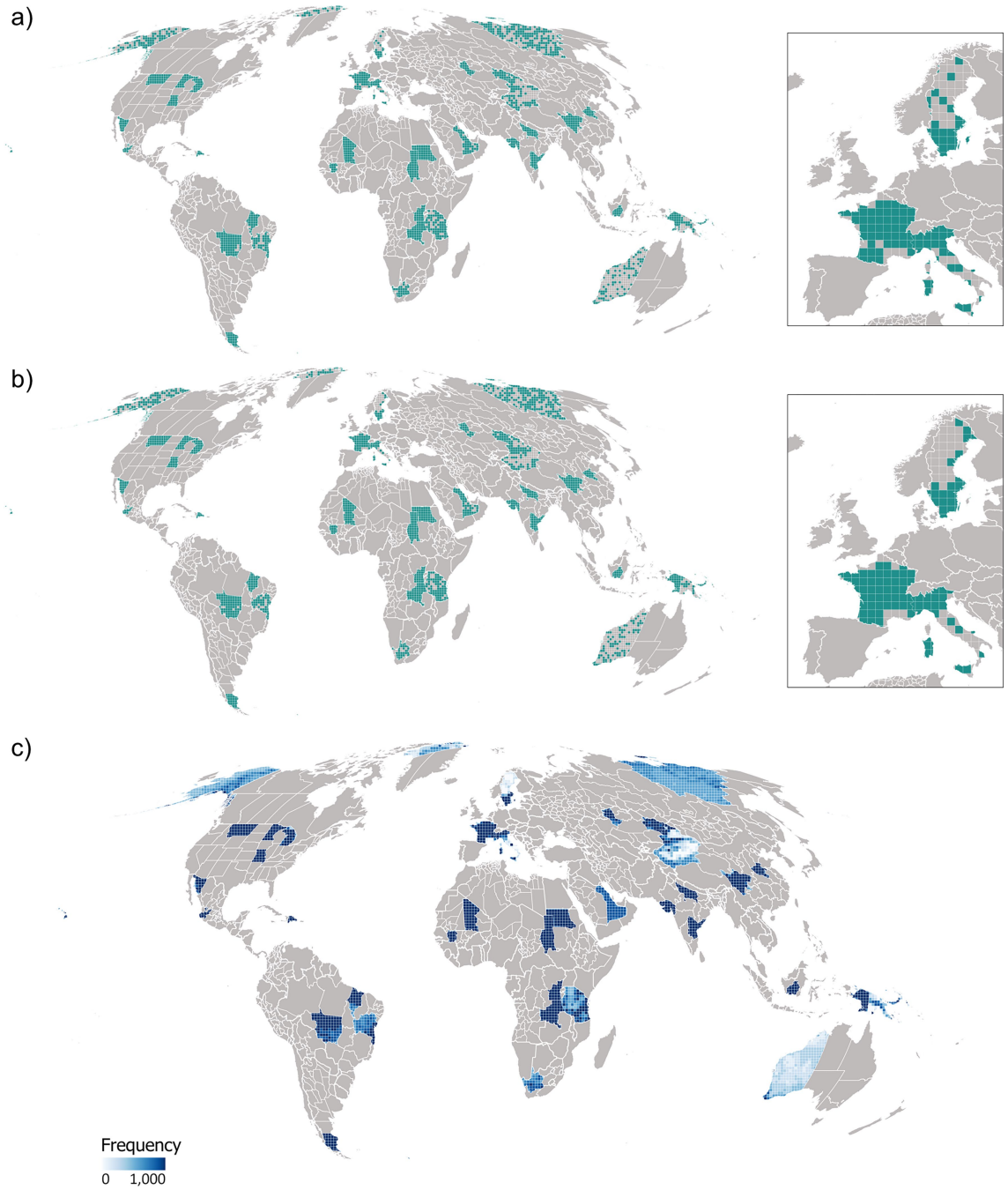


Calculate conservation area extent in each of the 1,000 representative sets of sampling units (four sets shown here for illustration).



Calculate the mean percentage conservation area extent for each set. Extrapolate from this representative sample to produce a global estimate.

Extended Data Fig. 1 | Infographic of the steps used to produce the global conservation area coverage estimate. (a) shows the methodology that identified the 1,000 representative sets of sampling units we used in our analysis[8], where each set is designed to contain 10% of the extent of each of the features that are known drivers of global conservation area coverage and biodiversity patterns. The infographic is based on a simplified example with two factors (i and ii), four features (■ ■ ■ ■) and eight countries (A to H), compared to the 89 features and 253 countries and territories in the actual analysis. (b) shows a simplified version of our extrapolation process based on one type of conservation area (shown in red), where we collected conservation area data for the sample countries, calculated the conservation area coverage in each of the 1,000 representative sets of sampling units, and then extrapolated the global conservation area coverage by calculating the mean of the results from each set of sampling units.



Extended Data Fig. 2 | Details of the 1,000 sets of sampling units used to extrapolate global conservation area coverage. All the sampling units were within a representative set of 25 countries and territories identified in a previous study[8]; national and subnational units not included in the samples are shown in grey. Map data from ref. 8, under a Creative Commons licence CC BY 4.0. Base maps use United Nations ClearMap/Official United Nations Boundaries from the United Nations Geospatial Network. (a) and (b) illustrate two of the 1,000 sets of sampling units in green, with insets showing Western Europe. Each set of sampling units has a minimum combined area while containing at least 10% coverage of each of the 89 features, nested across 10 factors, that are known drivers of global conservation area coverage and biodiversity patterns. (c) shows the sampling unit selection frequency, which is the number of times each sampling unit appeared in the 1,000 sets of sampling units. Sampling units in dark blue appeared in all 1,000 sets because they were always needed to meet the 10% coverage targets. Sampling units in paler blue appeared in fewer sets because they could be swapped for other sampling units containing similar amounts of the same features.

Extended Data Table 1 | Number of global and national conservation area datasets per country/territory used in the analysis

Country	Global	National	Total
Argentina	1	2	3
Australia	2	9	11
Brazil	2	7	9
China	2	2	4
Democratic Republic of the Congo	1	6	7
Dominican Republic	2	2	4
France	2		2
French Polynesia	1		1
Greenland	1		1
India	1	3	4
Indonesia	2	4	6
Italy	2		2
Kazakhstan	2	5	7
Kiribati	1		1
Mali	2	2	4
Mexico	2	1	3
Papua New Guinea	1		1
Russia	1		1
Saudi Arabia	1		1
South Africa	1	3	4
South Georgia and the South Sandwich Islands	1	1	2
Sudan	2	3	5
Sweden	2	4	6
Tanzania	2	5	7
USA	2	6	8

The global datasets consisted of the World Database on Protected and Conserved Areas[27] for every country/territory and the World Network of Biosphere Reserves for 14 countries/territories. The national datasets only covered one country/territory each and there were 65 in total.

Extended Data Table 2 | Publicly available global and national conservation area datasets used in the analysis

Region	Dataset	Description (from original source)	Date	Website
Australia	National Heritage List Spatial Database (NHL)	These data provide locational and attribute information for places for places nominated to and included in the National Heritage List as determined by the Australian Government managed by the Department of Climate Change, Energy, the Environment and Water.	2021	http://www.environment.gov.au/fed/catalog/search/resource/details.page?uuid=%7BDBB2344C-D0BE-4927-B0C5-44F9F8E1183F%7D
Australia	Collaborative Australian Protected Areas Database (CAPAD 2020)		2020	https://www.dcceew.gov.au/environment/land/nrs/science/capad/2020
Australia	Forest Management Plan 2014-2023	The proposed tenure and purpose for land vested in the Conservation Commission within the area covered by the Forest Management Plan 2014-2023 (FMP). Data from Government of Western Australia Department of Biodiversity, Conservation and Attractions	2014 - 2023	https://catalogue.data.wa.gov.au/dataset/forest-management-plan-2014-2023
Brazil	Indigenous Lands	Polygons and Points of Brazilian Indigenous Lands. Data produced by FUNAI	2021	https://www.gov.br/funai/pt-br/atuacao/terras-indigenas/geoprocessamento-e-mapas
Global	World Network of Biosphere Reserves	The World Network of Biosphere Reserves of the UNESCO Man and the Biosphere (MAB) Programme consists of a dynamic and interactive network of sites of excellence.	2022	https://en.unesco.org/biosphere/wnbr
Global	World Database on Protected Areas (WDPA)		2022	https://www.protectedplanet.net/
South Africa	South Africa Protected Areas Database (SAPAD)		2021	https://egis.environment.gov.za/gis_data_downloads
South Africa	South Africa Conservation Areas Database (SACAD)		2021	https://egis.environment.gov.za/gis_data_downloads
Sweden	Other Biotope Protection Area (övrigt biotopskyddsområde)	Biotope protection area used to preserve smaller habitats for nationally threatened species and small nature types worthy of protection in the forest or agricultural landscape. Forested biotope protection areas are managed by the Swedish Forestry Agency.	2021	https://skyddadnatur.naturvardsverket.se/
Sweden	Environmental protection agreements	Environmental protection agreement signed between property owners and the Swedish Environmental Protection Agency or county administrative board as contracting party for the state. A nature conservation agreement is a civil law agreement.	2021	https://skyddadnatur.naturvardsverket.se/
USA	Alaska Native Allotments		2019	https://gbp-blm-egis.hub.arcgis.com/
USA	Alaska Native Conveyances		2019	https://gbp-blm-egis.hub.arcgis.com/
USA	Military Installations, Ranges and Training Areas	This dataset, released by DoD, contains geographic information for major installations, ranges, and training areas in the United States and its territories.	2019	https://catalog.data.gov/dataset/military-installations-ranges-and-training-areas
USA	National Conservation Easement Database (NCED)	The National Conservation Easement Database (NCED) is the first national database of conservation easement information, compiling records from land trusts and public agencies throughout the United States	2020	https://www.conservationeasement.us/downloads
USA	Protected Areas Database of the United States (PAD-US) 2.0	The USGS Protected Areas Database of the United States (PAD-US) is the nation's inventory of protected areas, including public land and voluntarily provided private protected areas	2018	https://doi.org/10.5066/P955KPLE
USA	American Indian / Alaska Native / Native Hawaiian Areas (AIANNH)	This feature layer, utilizing National Geospatial Data Asset (NGDA) data from the U.S. Census Bureau, displays reservations, lands, statistical areas, and joint-use areas recognized as Federal, State, and Tribal entities.	2020	https://www2.census.gov/geo/tiger/TIGER2020/AIANNH/

The other datasets used in the analysis were provided based on the condition that they would not be publicly shared.

Extended Data Table 3 | Conservation area type coverage details for the representative sample and global estimate

Conservation Area Type	Sample conservation area coverage (%)	Global estimated conservation area coverage (%)
Globally-recognised PAs	16.15 (SD = 0.275)	15.79 (SD = 0)
Nationally-recognised PAs	3.72 (SD = 0.119)	3.64 (SD = 0.132)
Possible OECMs	7.54 (SD = 0.065)	7.38 (SD = 0.150)

The sample conservation area coverage (%) results show the mean and Standard Deviation (SD) of values calculated from 1,000 different but representative sets of sampling units, where each set covers 10% of the terrestrial realm within the same 25 countries and territories. These results were then used to extrapolate the global estimated conservation area coverage (%). The extrapolation was based on knowing the Globally recognized PAs coverage for both the sample and the entire terrestrial realm, because both are derived from the 2022 World Database on Protected and Conserved Areas[27] (WDPCA). The Globally recognized PA coverage in our sample was very similar to the official 2022 WDPCA global coverage of 15.79%. We then assumed the same levels of similarity for the other conservation area types, which are based on a number of sources, most of which are national datasets. We produced our global estimates by multiplying all the results from each of the 1,000 sets of sampling units by their ratio of official to sampled Globally recognized PA coverage (mean ratio = 0.978). The SD value for the Globally recognized PA coverage estimate was 0 because all these values were adjusted to equal 15.79% to match the official WCPCA value.

Extended Data Table 4 | Proportional Protection Equality analysis and coverage results for the conservation area types

Conservation areas included in analysis	Proportional Protection Equality	Total area protected p_i (km^2)	Total area a_i (km^2)	Median (p_i/a_i)	Min (p_i/a_i)	Max (p_i/a_i)
Globally-recognised PAs only	0.405 (+0.0059)	2,110,273 (+39,390)	13,557,915 (+47,215)	0.133	0	1
All PAs	0.469 (+0.0062)	3,629,642 (+43,350)	13,557,915 (+47,215)	0.178	0	1
All conservation areas	0.505 (+0.0053)	2,110,273 (+42,599)	13,557,915 (+47,215)	0.246	0	1

This measures how equally the ecoregions within our sample are represented within different combinations of conservation area types, based on the Terrestrial Ecoregions of the World dataset[33]. Protection Equality values[34] are derived from the Gini coefficient and range between 0 (when one ecoregion contains all the conservation areas) and 1 (when each ecoregion has the same proportion of its area under conservation). All values are the mean + standard deviation from the 1,000 sets of representative sampling units and 173 ecoregions. The data show protection equality values for Globally recognized PAs and then the effect of adding to this conservation area network the Nationally recognized PAs (i.e. all PAs), and then Possible OECMs (i.e. all conservation areas).

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For all statistical analyses, confirm that the following items are present in the figure legend, table legend, main text, or Methods section.

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Our web collection on statistics for biologists contains articles on many of the points above.

Software and code

Policy information about availability of computer code

Data collection	No software was used.
Data analysis	We used QGIS 3.16.3 to process the spatial data. We used R version 4.2.1 to analyse the data in the main manuscript. This analysis used the core R functions to produce descriptive statistics. The 1,000 sets of sampling units we used in our analyses were identified as part of previous work (Sykes et al, 2024, Oryx 58, 192–201) based on the Marxan spatial prioritisation software package. We investigated the extent to which these sets of sampling units are representative of the terrestrial realm and present the results in the Supplementary Information. We calculated Cramér's V values using core R functions and Morisita–Horn similarity index values using the R vegan package (vegdist function, method = "horn").

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Policy information about studies with human participants or human data. See also policy information about sex, gender (identity/presentation), and sexual orientation and race, ethnicity and racism.

Reporting on sex and gender	N/A
Reporting on race, ethnicity, or other socially relevant groupings	N/A
Population characteristics	No data on population characteristics was collected.
Recruitment	In this study we collected the available spatial conservation area datasets for 25 globally-representative countries and territories. To collect these data we recruited expert volunteers on each country through the IUCN World Commission on Protected Areas, and through the networks of our co-authors and the United Nations Environment Programme - World Conservation Monitoring Centre. We then used the snowballing technique to identify and contact additional experts. The final set of experts only provided data on conservation areas.
Ethics oversight	This project was approved by the University of Kent Faculty of Social Sciences Research Ethics Advisory Group for Human Participants (ID 20221648467987119).

Note that full information on the approval of the study protocol must also be provided in the manuscript.

Field-specific reporting

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Ecological, evolutionary & environmental sciences study design

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Study description	According to the official data, conservation areas cover 18.5% of the terrestrial realm and governments have committed through Kunming-Montreal Global Biodiversity Framework Target 3 to increase this to at least 30% by 2030. However, nationally available datasets suggest more conservation areas exist than are currently reflected in global figures. We evaluated progress towards the area component of Target 3 using a globally representative sample across 25 countries and territories that incorporated these national datasets. We then extrapolated from this sample to produce a more accurate estimate of global conservation area coverage.
Research sample	We used a sample identified from a previous study (Sykes et al., 2024, Oryx 58, 192-201) that selected 10% of the terrestrial realm in 25 countries and territories, based on a spatial prioritisation that ensured the sample was representative of the features belonging to ten factors that are known to influence conservation area coverage and broad biogeographic patterns. More specifically, Sykes et al (2024) was based on selecting the smallest number of countries, and the smallest area of 10,000 km2 sampling units within those countries, that contain at least 10% of the following features: 16 biomes (Olson et al., 2001), as conservation area extent is higher in biomes with less land suitable for agriculture (Hoekstra et al., 2005) and biodiversity differs greatly between biomes, with ecosystem types sharing similar species composition (Gaston and Spicer, 2013); five elevation zones (Farr et al., 2007), as conservation area extent tends to increase at higher elevations (Joppa and Pfaff, 2009) and species composition varies across elevation gradients (Gaston and Spicer, 2013); four government effectiveness categories (World Bank, 2019a), as stable countries with higher bureaucratic quality have greater capacity to expand conservation area networks (Laurance, 2004); four income (per capita) categories (World Bank, 2019b), as wealthier countries have more resources to fund the expansion of conservation area networks (Waldron et al., 2013); five island and continent size categories (GADM, 2018; Sykes et al., 2024), as islands are often geographically and biologically distinct, with unique and highly threatened biodiversity (Gaston and Spicer, 2013); 12 landcover types (ESA GlobCover Project, 2009), as conservation area extent differs between landcover types (Joppa and Pfaff,

2009) and species composition varies between vegetation types and land-uses (Gaston and Spicer, 2013); seven latitude zones (Sykes et al., 2024), as conservation area extent is higher at latitudes with less land suitable for agriculture (Hoekstra et al., 2005) and species composition shows strong latitudinal gradients (Gaston and Spicer, 2013); five population density categories (UNPD, 2013), as conservation area extent is lower in regions with high human population density (Joppa and Pfaff, 2009); nine biogeographic realms (Olson et al., 2001), as biodiversity shows strong biogeographic patterns at the continental scale (Gaston and Spicer, 2013), and; 22 subregions (UNSD, 2019), as sub-sections of continents have relatively similar histories, economies and legislative frameworks (Siegfried et al., 1998), and biodiversity shows strong biogeographic patterns at the sub-continental scale (Gaston and Spicer, 2013).

We used two analytical approaches to determine whether our sample was representative of global patterns. We did this by comparing the observed area of each feature with its expected area, where the expected value was calculated by multiplying the total area of the associated factor (this varied slightly between factors because of small differences in the underlying spatial datasets) by the proportion of the terrestrial realm covered by that feature. We used Cramér's V to measure the effect size of comparisons based on chi-squared tests and all the values were <0.1, where 0 represents no association and 1 represents complete association. We also calculated the Morisita–Horn similarity index for each factor, which is widely used to measure the similarity between two samples based on the relative abundance of their component categories (in our case, the observed and expected values). All the similarity index values were >0.99, where 0 means there is no similarity and 1 means they are identical.

These results show that our sample is strongly representative of global patterns and provide a solid basis for the analyses we present in the manuscript. All these results are described in the Supplementary Information.

Sampling strategy

The previous study by Sykes et al. (2024, Oryx 58, 192-201) identified 10% global coverage as a suitable sample, based on the trade-off between increasing the amount of land sampled while minimising the number of countries selected, as each additional country would significantly increase the amount of time and resources needed to collect the data.

Data collection

Data collection was based on two components. The first component involved experts from each of the 25 countries and territories providing the available spatial conservation area datasets. Some of these datasets are publicly available and were downloaded from official websites. Other datasets were provided under licence by the organisations that manage and monitor specific conservation areas. The second component involved these experts identifying which of these conservation areas could be classified as one of three categories (Globally-recognised protected areas, Nationally-recognised protected areas and Possible OECMs).

Timing and spatial scale

The conservation area datasets for each of the 25 countries and territories were collected between 2019 and 2022.

Data exclusions

No data that met our conservation area type definitions were excluded.

Reproducibility

We developed our analysis to overcome the fact that it is extremely time-consuming to collect and analyse nationally-available conservation area datasets, making it impossible to do this for every country in a reasonable timeframe. Instead we used an optimisation-based approach and collected data on a representative sample of 25 countries and nations. Our analysis is repeatable, as other researchers could collect and analyse datasets from the same countries (but they would have to develop their own data sharing agreements when dealing with politically sensitive information). However, it is quite possible that such an analysis would produce slightly different estimates of global conservation area coverage, depending on which datasets were provided by relevant experts. In particular, it is likely that our coverage result is an under-estimate because some countries lacked the capacity to map all of their conservation areas, and have only started doing so as part of their new Convention on Biological Diversity commitments.

Randomization

N/A

Blinding

Our analysis was based on collecting existing conservation area datasets for each of our focal countries and territories, so blinding was not relevant.

Did the study involve field work? ☐ Yes ☒ No

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☒	☐ Clinical data
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☒	☐ Plants

Methods

n/a	Involved in the study
☒	☐ ChIP-seq
☒	☐ Flow cytometry
☒	☐ MRI-based neuroimaging

Plants

Seed stocks	N/A
Novel plant genotypes	N/A
Authentication	N/A