

Supplementary information for:

Area-based conservation in the 21st century

Global gap analysis for protected area coverage

The Convention on Biological Diversity's current ten-year Strategic Plan for Biodiversity¹ has an explicit target (Aichi Target 11) to "at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and OECMs, and integrated into the wider landscape and seascape" by 2020. We performed a spatial overlay analysis to review how expansion of protected areas globally between 2010 and 2019 affected core components of Aichi Target 11. We projected all spatial data into Mollweide equal area projection, and processed in vector format using ESRI ArcGIS v10.7.1, calculating coverage through spatial intersections of protected areas and conservation features.

Data on protected area location, boundary, and year of inscription were obtained from the June 2019 version of the World Database on Protected Areas (WDPA)². We incorporated into the June 2019 version of WDPA 768 protected areas (1,425,770 km²) in China (sites that were available in the June 2017 version of WDPA, but not publicly available thereafter). Following the WDPA best practice guidelines (www.protectedplanet.net/c/calculating-protected-area-coverage) and similar global studies³⁻⁵, we included in our analysis only protected areas from the WDPA database that have a status of 'Designated', 'Inscribed' or 'Established', and removed all points and polygons with a status of 'Proposed' or 'Not Reported'. We also removed all points and polygons designated as 'UNESCO MAB Biosphere Reserves', as these do not meet the IUCN definition of a protected area. We buffered the point feature class in accordance to the point's area as stated in the 'REP_AREA' field, and merged the buffered points with polygons to create one polygon layer. To eliminate overlaps

among protected area polygons, and avoid double counting protected areas, we dissolved overlapping areas into a single polygon, assigning overlapping areas the oldest year of establishment of all protected areas in that location. As the year of establishment was unknown for 9.9% of protected areas (21,881 sites) in the WDPA version we used, we assigned missing establishment dates by randomly selecting a year (with replacement) from all protected areas within the same country with a known date of establishment. For countries with fewer than five protected areas with known year of establishment, a year was randomly selected from all terrestrial protected areas with a known date of establishment. The random assignment was repeated 1,000 times, to identify the median and year of establishment, which we assigned to each protected area without an establishment date. To reduce computational burden, we removed redundant vertices (tolerance was set at 1000m) in the polygon layer. We then used a layer of terrestrial country boundaries⁶ to delineate marine from terrestrial protected areas.

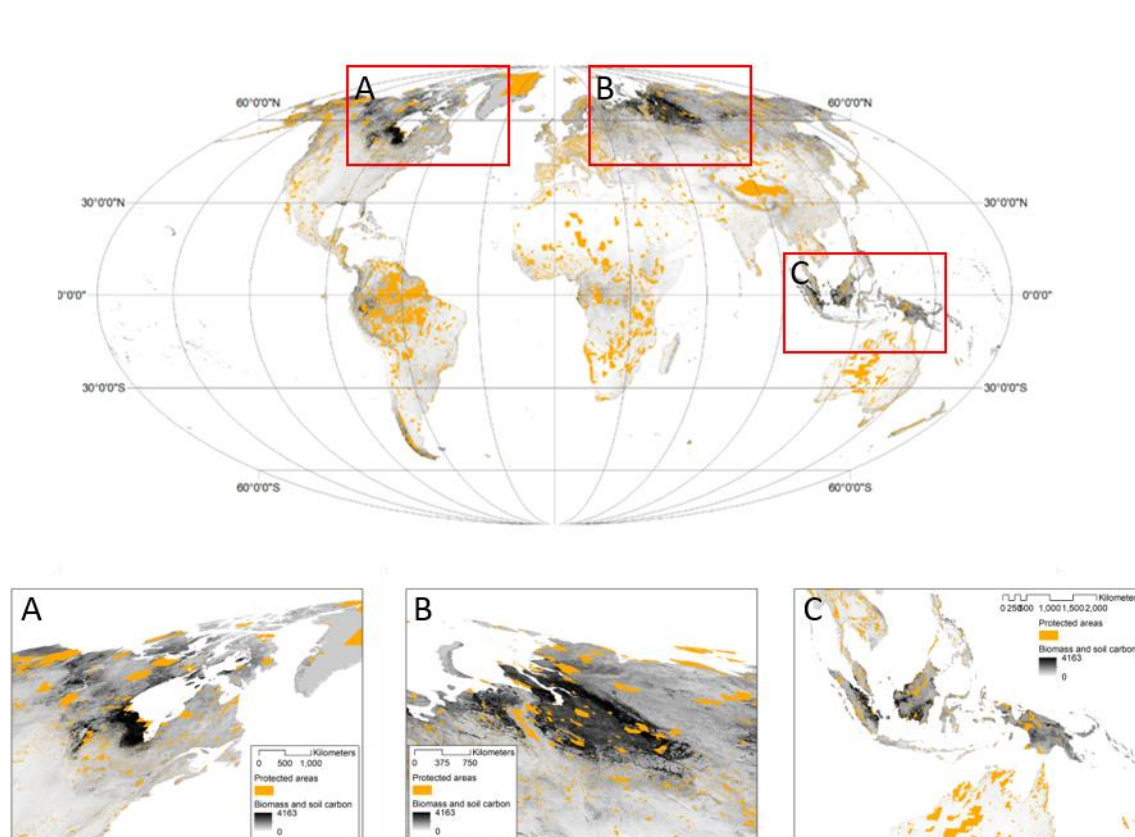
For “areas of particular importance for biodiversity”, we assessed coverage of Key Biodiversity Areas (KBAs)⁷, terrestrial wilderness areas⁸ and marine wilderness areas⁹. We delineated marine KBAs from terrestrial and freshwater KBAs by intersecting the global KBA dataset¹⁰ with terrestrial administrative areas of all countries⁶. Terrestrial wilderness represented all pressure free lands (i.e. had a Human Footprint¹¹ equal to zero) with a contiguous area >10,000 km² in 2009⁸. Marine wilderness represented areas with little impact (lowest 10% of all impacts mapped globally) from 15 anthropogenic stressors¹² and also a very low combined cumulative impact from these stressors as of 2013⁹.

For “areas of particular importance for [...] ecosystem services”, we assessed coverage of a global map of biomass and soil carbon¹³. This map combines datasets on tree biomass¹⁴, above-ground biomass woodlands and savannahs (Africa only)¹⁵, grassland biomass¹⁶, biomass in other areas of shrubland, sparse vegetation and cropland¹⁷, landcover from the ESA Climate Change Initiative Landcover product for 2010 at 300m resolution and soil organic carbon stocks to a depth of 1m from

SoilGrids 250m¹⁸. Soil organic carbon stocks were resampled to a spatial resolution of 300m to match that of biomass maps. `

To evaluate how “ecologically representative” the global protected area network was between 2010 and 2019, we assessed coverage of 4,891 vertebrate species listed as Vulnerable, Endangered or Critically Endangered (herein ‘threatened’ species) on the 2019 IUCN Red List¹⁹. Following previous studies^{5,20-22}, we set representation targets for the percentage of each species’ distribution to be covered by protected areas. Representation targets were scaled by species’ range size, decreasing from 100% for species with distributions <1,000 km² to 10% for species with distributions >250,000 km², and linearly interpolated on a log-linear scale between these two thresholds. In addition to threatened vertebrate species, we also assessed coverage of terrestrial ecoregions²³, marine ecoregions²⁴ and off-shelf pelagic regions²⁵. Following previous studies, we assessed coverage of ecoregions against targets of 17% protection for terrestrial ecoregions and 10% for marine ecoregions or off-shelf pelagic regions^{5,26-28}.

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68 **Figure S1** The terrestrial protected area network overlaid on a global map of biomass and soil
 69 carbon. Large unprotected repositories of biomass and soil carbon are prevalent across north-east
 70 Canada (A), Russia (B) and south-east Asia (C).

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73 **Table S1** Threatened birds, amphibians and mammals who in our analysis remain without any formal
 74 protection as of 2019. Representation targets (as percentage of total range) vary from 100% for
 75 species with very narrow distributions (<1,000 km²) to 10% for widespread species (>250,000 km²).

Taxonomic group	Species	Geographic range (km ²)	Representation target (%)
bird	<i>Accipiter butleri</i>	330	100
bird	<i>Acrocephalus aequinoctialis</i>	506	100
bird	<i>Acrocephalus caffer</i>	268	100
bird	<i>Acrocephalus rehsei</i>	18	100
bird	<i>Acrocephalus rimitarae</i>	7	100
bird	<i>Actenoides excelsus</i>	1,751	84
amphibian	<i>Adelophryne baturitensis</i>	1,040	99
amphibian	<i>Adelophryne maranguapensis</i>	33	100
bird	<i>Aerodramus sawtelli</i>	27	100
bird	<i>Aethopyga duyvenbodei</i>	676	100
amphibian	<i>Afghanodon mustersi</i>	308	100
amphibian	<i>Afrixalus lacteus</i>	614	100
bird	<i>Aglaeactis aliciae</i>	343	100
mammal	<i>Ailurops melanotis</i>	276	100
bird	<i>Alauda razae</i>	1,061	98
amphibian	<i>Alexteroon jynx</i>	60	100
amphibian	<i>Allobates ignotus</i>	290	100
amphibian	<i>Allobates juanii</i>	69	100
amphibian	<i>Allobates subfolionidificans</i>	180	100
bird	<i>Alopecoenas kubaryi</i>	430	100
amphibian	<i>Alsodes nora</i>	82	100
amphibian	<i>Alsodes pehuenche</i>	6	100
bird	<i>Amazilia alfaroana</i>	81	100
amphibian	<i>Ambystoma amblycephalum</i>	18	100
amphibian	<i>Ambystoma andersoni</i>	19	100
amphibian	<i>Ambystoma bombypellum</i>	86	100
amphibian	<i>Ambystoma dumerilii</i>	6	100
amphibian	<i>Ambystoma taylori</i>	16	100
amphibian	<i>Ameerega planipaleae</i>	80	100
mammal	<i>Ammodorcas clarkei</i>	94,180	10
amphibian	<i>Andinobates dorisswansonae</i>	33	100
amphibian	<i>Andinobates tolimensis</i>	29	100
bird	<i>Anodorhynchus glaucus</i>	1	100
amphibian	<i>Ansonia echinata</i>	51	100
amphibian	<i>Ansonia latidisca</i>	14	100
amphibian	<i>Ansonia smeagol</i>	11	100
amphibian	<i>Ansonia vidua</i>	10	100
bird	<i>Apalis fuscicularis</i>	7	100
bird	<i>Aplonis cinerascens</i>	31	100

bird	<i>Aplonis pelzelni</i>	62	100
bird	<i>Aplonis santovestris</i>	60	100
amphibian	<i>Aquiloerycea praecellens</i>	23	100
amphibian	<i>Aquiloerycea quetzalanensis</i>	54	100
amphibian	<i>Aromobates saltuensis</i>	352	100
amphibian	<i>Arthroleptis kidogo</i>	70	100
amphibian	<i>Arthroleptis nguruensis</i>	13	100
amphibian	<i>Arthroleptis nlonakoensis</i>	6	100
amphibian	<i>Arthroleptis perreti</i>	285	100
amphibian	<i>Astylosternus nganhanus</i>	170	100
amphibian	<i>Astylosternus perreti</i>	409	100
amphibian	<i>Atelopus arthuri</i>	74	100
amphibian	<i>Atelopus balios</i>	55	100
amphibian	<i>Atelopus chocoensis</i>	235	100
amphibian	<i>Atelopus epikeisthos</i>	22	100
amphibian	<i>Atelopus eusebiodiazi</i>	10	100
amphibian	<i>Atelopus farci</i>	2	100
amphibian	<i>Atelopus gigas</i>	6	100
amphibian	<i>Atelopus guanujo</i>	145	100
amphibian	<i>Atelopus longibrachius</i>	5	100
amphibian	<i>Atelopus lynchi</i>	11	100
amphibian	<i>Atelopus monohernandezii</i>	102	100
amphibian	<i>Atelopus onorei</i>	11	100
amphibian	<i>Atelopus patazensis</i>	28	100
amphibian	<i>Atelopus pinangoi</i>	47	100
amphibian	<i>Atelopus pyrodactylus</i>	11	100
amphibian	<i>Atelopus quimbaya</i>	20	100
bird	<i>Atlapetes melanopsis</i>	3,098	68
bird	<i>Atlapetes pallidiceps</i>	1,371	91
amphibian	<i>Atopophrynus syntomopus</i>	6	100
mammal	<i>Batomys russatus</i>	832	100
amphibian	<i>Batrachoseps regius</i>	160	100
amphibian	<i>Boana palaestes</i>	538	100
amphibian	<i>Bokermannohyla vulcaniae</i>	113	100
amphibian	<i>Bolitoglossa guaneae</i>	4,202	60
amphibian	<i>Bolitoglossa oaxacensis</i>	1,658	86
amphibian	<i>Bolitoglossa oresbia</i>	10	100
amphibian	<i>Bolitoglossa pandi</i>	29	100
amphibian	<i>Bolitoglossa riletti</i>	307	100
amphibian	<i>Bolitoglossa zapoteca</i>	78	100
amphibian	<i>Boophis liami</i>	35	100
amphibian	<i>Boophis williamsi</i>	13	100
amphibian	<i>Boulengerula niedeni</i>	13	100
amphibian	<i>Bradytriton silus</i>	13	100
amphibian	<i>Cacosternum thorini</i>	46	100
amphibian	<i>Callimedusa ecuatoriana</i>	8	100

amphibian	<i>Callixalus pictus</i>	6,767	47
amphibian	<i>Callulina dawida</i>	251	100
amphibian	<i>Callulina hansenii</i>	13	100
amphibian	<i>Callulina meteora</i>	3	100
amphibian	<i>Callulops kopsteini</i>	580	100
bird	<i>Caprimulgus prigoginei</i>	2,179	78
amphibian	<i>Cardioglossa annulata</i>	614	100
amphibian	<i>Cardioglossa manengouba</i>	11	100
amphibian	<i>Cardioglossa trifasciata</i>	15	100
amphibian	<i>Cardioglossa venusta</i>	429	100
amphibian	<i>Centrolene petrophilum</i>	319	100
amphibian	<i>Centrolene solitaria</i>	340	100
amphibian	<i>Ceuthomantis smaragdinus</i>	29	100
amphibian	<i>Charadrahyla altipotens</i>	11	100
amphibian	<i>Charadrahyla chaneque</i>	309	100
amphibian	<i>Charadrahyla juanitae</i>	2,698	72
bird	<i>Charadrius sanctaehelenae</i>	54	100
amphibian	<i>Chiropterotriton arboreus</i>	14	100
amphibian	<i>Chiropterotriton chiropterus</i>	90	100
amphibian	<i>Chiropterotriton laevis</i>	72	100
amphibian	<i>Chiropterotriton mosaueri</i>	41	100
amphibian	<i>Chiropterotriton terrestris</i>	30	100
bird	<i>Chlorocichla prigoginei</i>	874	100
amphibian	<i>Choerophryne siegfriedi</i>	17	100
amphibian	<i>Chrysobatrachus cupreonitens</i>	585	100
bird	<i>Clytorhynchus sanctaecrucis</i>	505	100
bird	<i>Coenocorypha pusilla</i>	5	100
mammal	<i>Congosorex phillipsorum</i>	86	100
amphibian	<i>Cophixalus nubicola</i>	136	100
amphibian	<i>Cophyla mavomavo</i>	503	100
amphibian	<i>Cophyla tsaratananaensis</i>	24	100
bird	<i>Coracornis sanghirensis</i>	5	100
amphibian	<i>Cornufer parkeri</i>	1,130	97
bird	<i>Corvus unicolor</i>	407	100
amphibian	<i>Craugastor glaucus</i>	53	100
amphibian	<i>Craugastor guerreroensis</i>	7	100
amphibian	<i>Craugastor olanchano</i>	596	100
amphibian	<i>Craugastor omiltemanus</i>	1,760	84
amphibian	<i>Craugastor silvicola</i>	113	100
amphibian	<i>Craugastor trachydermus</i>	51	100
amphibian	<i>Craugastor uno</i>	323	100
mammal	<i>Cremnomys elvira</i>	15	100
mammal	<i>Crocidura hispida</i>	38	100
mammal	<i>Cryptochloris wintoni</i>	8	100
mammal	<i>Cryptotis griseoventris</i>	158	100
amphibian	<i>Cryptotriton alvarezdeltoroi</i>	46	100

mammal	<i>Ctenomys latro</i>	6,558	47
mammal	<i>Ctenomys pilarensis</i>	1,285	93
mammal	<i>Ctenomys pundti</i>	10,526	34
mammal	<i>Ctenomys roigi</i>	85	100
mammal	<i>Dactylopsila tatei</i>	146	100
mammal	<i>Dendrolagus scottae</i>	1,255	94
amphibian	<i>Dendropsophus gryllatus</i>	167	100
amphibian	<i>Dendrotriton chujorum</i>	9	100
amphibian	<i>Dendrotriton cuchumatanus</i>	13	100
amphibian	<i>Dendrotriton rabbi</i>	37	100
mammal	<i>Dobsonia chapmani</i>	29	100
mammal	<i>Dryomys niethammeri</i>	29	100
bird	<i>Ducula galeata</i>	118	100
amphibian	<i>Duellmanohyla chamulae</i>	476	100
amphibian	<i>Duttaphrynus scorteccii</i>	204	100
amphibian	<i>Echinotriton chinhaiensis</i>	51	100
mammal	<i>Echymipera davidi</i>	280	100
amphibian	<i>Ecnomiohyla echinata</i>	32	100
amphibian	<i>Ecnomiohyla minera</i>	156	100
amphibian	<i>Ecnomiohyla salvaje</i>	52	100
bird	<i>Edolisoma insperatum</i>	359	100
bird	<i>Edolisoma nesiotis</i>	99	100
amphibian	<i>Eleutherodactylus adelus</i>	34	100
amphibian	<i>Eleutherodactylus caribe</i>	15	100
amphibian	<i>Eleutherodactylus dilatus</i>	155	100
amphibian	<i>Eleutherodactylus dixonii</i>	142	100
amphibian	<i>Eleutherodactylus glanduliferoides</i>	38	100
amphibian	<i>Eleutherodactylus grahmi</i>	838	100
amphibian	<i>Eleutherodactylus grandis</i>	46	100
amphibian	<i>Eleutherodactylus juanariveroi</i>	5	100
amphibian	<i>Eleutherodactylus leberi</i>	378	100
amphibian	<i>Eleutherodactylus lucioi</i>	35	100
amphibian	<i>Eleutherodactylus mariposa</i>	142	100
amphibian	<i>Eleutherodactylus michaelschmidei</i>	170	100
amphibian	<i>Eleutherodactylus pezopetrus</i>	22	100
amphibian	<i>Eleutherodactylus poolei</i>	19	100
amphibian	<i>Eleutherodactylus rhodesi</i>	85	100
amphibian	<i>Eleutherodactylus rufescens</i>	5	100
amphibian	<i>Eleutherodactylus sciagraphus</i>	77	100
amphibian	<i>Eleutherodactylus syristes</i>	365	100
amphibian	<i>Eleutherodactylus warreni</i>	180	100
bird	<i>Eriocnemis godini</i>	411	100
bird	<i>Erythropitta caeruleitorques</i>	561	100
bird	<i>Erythropitta palliceps</i>	195	100
bird	<i>Erythropitta splendida</i>	287	100
amphibian	<i>Euparkerella tridactyla</i>	5	100

amphibian	<i>Eurycea chisholmensis</i>	60	100
amphibian	<i>Eurycea naufragia</i>	52	100
amphibian	<i>Eurycea sosorum</i>	26	100
amphibian	<i>Eurycea waterlooensis</i>	5	100
bird	<i>Eutrichomyias rowleyi</i>	560	100
amphibian	<i>Exerodonta chimalapa</i>	253	100
amphibian	<i>Exerodonta perkinsi</i>	34	100
amphibian	<i>Fejervarya murthii</i>	31	100
amphibian	<i>Fejervarya nicobariensis</i>	414	100
bird	<i>Gallicolumba menagei</i>	800	100
bird	<i>Gallirallus calayanensis</i>	68	100
amphibian	<i>Gastrotheca pacchamama</i>	225	100
amphibian	<i>Gastrotheca pachachacae</i>	10	100
amphibian	<i>Gastrotheca rebecca</i>	312	100
amphibian	<i>Gastrotheca stictopleura</i>	169	100
mammal	<i>Gazella spekei</i>	182,128	10
amphibian	<i>Geocrinia vitellina</i>	17	100
amphibian	<i>Gephyromantis hintelmannae</i>	3,149	68
amphibian	<i>Gyrinophilus subterraneus</i>	3	100
mammal	<i>Habromys chinanteco</i>	83	100
mammal	<i>Habromys ixtlani</i>	93	100
mammal	<i>Habromys lepturus</i>	86	100
mammal	<i>Heterogeomys lanius</i>	88	100
mammal	<i>Heteromys spectabilis</i>	4,829	56
mammal	<i>Hipposideros demissus</i>	3,353	66
mammal	<i>Hipposideros edwardshilli</i>	1,999	81
amphibian	<i>Hyloscirtus lynchi</i>	20	100
amphibian	<i>Hyloxalus cevallosi</i>	641	100
amphibian	<i>Hyloxalus ruizi</i>	81	100
amphibian	<i>Hyperolius constellatus</i>	3,605	64
amphibian	<i>Hyperolius dintelmanni</i>	31	100
amphibian	<i>Hyperolius leleupi</i>	2,620	73
amphibian	<i>Hyperolius leucotaenius</i>	3,502	65
mammal	<i>Hypogeomys antimena</i>	335	100
amphibian	<i>Hypsiboas cymbalum</i>	210	100
amphibian	<i>Incilius cristatus</i>	101	100
amphibian	<i>Incilius spiculatus</i>	51	100
amphibian	<i>Indirana gundia</i>	69	100
amphibian	<i>Iranodon gorganensis</i>	41	100
amphibian	<i>Isthmura naucampatepetl</i>	59	100
amphibian	<i>Kalophrynus yongi</i>	10	100
bird	<i>Lalage conjuncta</i>	343	100
bird	<i>Lamprolia klinesmithi</i>	217	100
bird	<i>Laniarius amboimensis</i>	2,942	70
bird	<i>Laniarius brauni</i>	596	100
amphibian	<i>Laotriton laoensis</i>	4,583	57

mammal	<i>Lepilemur grewockorum</i>	1,889	82
mammal	<i>Lepilemur septentrionalis</i>	142	100
amphibian	<i>Leptobranchium kantonishikawai</i>	10	100
amphibian	<i>Leptobranchium xanthops</i>	615	100
amphibian	<i>Leptodactylodon axillaris</i>	74	100
amphibian	<i>Leptodactylodon erythrogaster</i>	33	100
amphibian	<i>Leptodactylodon ornatus</i>	923	100
amphibian	<i>Leptodactylodon wildi</i>	61	100
amphibian	<i>Leptopelis anebos</i>	320	100
amphibian	<i>Leptopelis susanae</i>	835	100
amphibian	<i>Leptopelis yaldeni</i>	6,529	48
mammal	<i>Lepus flavigularis</i>	112	100
amphibian	<i>Limnonectes cinalubang</i>	20	100
bird	<i>Linaria johannis</i>	2,356	76
bird	<i>Lipaugus weberi</i>	936	100
amphibian	<i>Lithobates chichicuahutla</i>	4	100
amphibian	<i>Lithobates dunni</i>	1,407	90
amphibian	<i>Lithobates johni</i>	1,879	82
amphibian	<i>Lithobates miadis</i>	2	100
amphibian	<i>Lithobates pueblae</i>	8	100
amphibian	<i>Lithobates tlaloci</i>	37	100
amphibian	<i>Litoria becki</i>	149	100
amphibian	<i>Litoria myola</i>	4	100
amphibian	<i>Litoria quadrilineata</i>	122	100
mammal	<i>Lophuromys chercherensis</i>	131	100
mammal	<i>Lophuromys eisentrauti</i>	56	100
amphibian	<i>Lyciasalamandra antalyana</i>	213	100
amphibian	<i>Lyciasalamandra atifi</i>	1,759	84
amphibian	<i>Lyciasalamandra billae ssp. billae</i>	61	100
amphibian	<i>Lyciasalamandra fazilae</i>	693	100
amphibian	<i>Lyciasalamandra flavimembris</i>	363	100
amphibian	<i>Mantella cowanii</i>	254	100
amphibian	<i>Mantella milotympanum</i>	66	100
amphibian	<i>Mantidactylus pauliani</i>	6	100
mammal	<i>Margaretamys christinae</i>	1,174	96
mammal	<i>Marmosops handleyi</i>	69	100
bird	<i>Mayrornis schistaceus</i>	180	100
mammal	<i>Megadontomys cryophilus</i>	393	100
bird	<i>Megalurulus grosvenori</i>	2,398	76
amphibian	<i>Megastomatochyla mixe</i>	33	100
amphibian	<i>Megastomatochyla nubicola</i>	139	100
amphibian	<i>Megastomatochyla pellita</i>	1,093	98
mammal	<i>Melanomys zunigae</i>	230	100
amphibian	<i>Melanophryniscus admirabilis</i>	10	100
amphibian	<i>Melanophryniscus langonei</i>	103	100
amphibian	<i>Melanophryniscus macrogranulosus</i>	29	100

amphibian	<i>Melanophryniscus orejasmirandai</i>	201	100
mammal	<i>Melogale everetti</i>	20	100
mammal	<i>Mesocricetus auratus</i>	4,714	57
bird	<i>Metabolus rugensis</i>	85	100
bird	<i>Metabolus takatsukasae</i>	107	100
amphibian	<i>Micrixalus kottigeharensis</i>	399	100
mammal	<i>Microcebus berthae</i>	549	100
mammal	<i>Microcebus danfossi</i>	1,619	87
mammal	<i>Microcebus gerpi</i>	21	100
mammal	<i>Microcebus jollyae</i>	158	100
mammal	<i>Microcebus macarthurii</i>	675	100
amphibian	<i>Microkayla boettgeri</i>	10	100
mammal	<i>Microperoryctes aplini</i>	77	100
mammal	<i>Microtus bavaricus</i>	16	100
mammal	<i>Microtus umbrosus</i>	890	100
mammal	<i>Millardia kondana</i>	5	100
mammal	<i>Miniopterus robustior</i>	1,838	83
bird	<i>Mirafra ashi</i>	3,144	68
bird	<i>Mirafra sharpii</i>	16,233	22
bird	<i>Mixornis prillwitzii</i>	433	100
mammal	<i>Mogera uchidai</i>	4	100
bird	<i>Myiagra cervinicolor</i>	110	100
bird	<i>Myiagra hebetior</i>	345	100
mammal	<i>Myosorex rumpii</i>	256	100
mammal	<i>Mystacina robusta</i>	10	100
bird	<i>Myzomela chermesina</i>	43	100
amphibian	<i>Nasikabatrachus sahyadrensis</i>	8	100
amphibian	<i>Nectophrynoides poyntoni</i>	3	100
amphibian	<i>Nectophrynoides wendyae</i>	15	100
mammal	<i>Neotoma nelsoni</i>	46	100
bird	<i>Nesospiza questii</i>	2	100
bird	<i>Nesospiza wilkinsi</i>	2	100
amphibian	<i>Niceforonia lucida</i>	210	100
mammal	<i>Nilopegamys plumbeus</i>	309	100
bird	<i>Ninox malaitae</i>	4,383	59
bird	<i>Ninox roseoaxillaris</i>	3,402	66
amphibian	<i>Noblella madrevela</i>	10	100
amphibian	<i>Nototriton major</i>	6	100
amphibian	<i>Nyctibatrachus dattatreyaensis</i>	96	100
amphibian	<i>Nyctimystes rueppelli</i>	7,941	42
amphibian	<i>Nymphargus armatus</i>	52	100
amphibian	<i>Nymphargus laurae</i>	11	100
amphibian	<i>Nymphargus mixomaculatus</i>	1	100
amphibian	<i>Nymphargus phenax</i>	9	100
amphibian	<i>Occidozyga tompotika</i>	81	100
mammal	<i>Ochotona hoffmanni</i>	1,241	94

mammal	<i>Ochotona iliensis</i>	12,785	29
amphibian	<i>Odorrana wuchuanensis</i>	525	100
amphibian	<i>Oophaga andresi</i>	3,844	62
amphibian	<i>Oophaga occaltator</i>	50	100
amphibian	<i>Oreobates ayacucho</i>	104	100
amphibian	<i>Oreobates lehri</i>	1,352	92
amphibian	<i>Oreobates pereger</i>	162	100
amphibian	<i>Oreobates zongoensis</i>	16	100
amphibian	<i>Oreophryne zimмери</i>	20	100
amphibian	<i>Oreophrynella macconnelli</i>	210	100
bird	<i>Otus siaoensis</i>	116	100
mammal	<i>Pappogeomys bulleri ssp. alcorni</i>	346	100
mammal	<i>Paraxerus vincenti</i>	2,232	78
bird	<i>Pareudiastes pacificus</i>	292	100
bird	<i>Pareudiastes silvestris</i>	1	100
amphibian	<i>Parvimolge townsendi</i>	692	100
amphibian	<i>Pelophryne linanitensis</i>	10	100
amphibian	<i>Pelophryne murudensis</i>	10	100
amphibian	<i>Peltophryne fracta</i>	852	100
mammal	<i>Peromyscus bullatus</i>	66	100
mammal	<i>Peromyscus dickeyi</i>	9	100
mammal	<i>Peromyscus mayensis</i>	90	100
mammal	<i>Peromyscus winkelmanni</i>	303	100
mammal	<i>Petaurus abidi</i>	93	100
bird	<i>Petroica dannefaerdi</i>	3	100
bird	<i>Petroica traversi</i>	4	100
amphibian	<i>Petropedetes perreti</i>	491	100
mammal	<i>Phalanger alexandrae</i>	151	100
mammal	<i>Phalanger lullulae</i>	892	100
mammal	<i>Phalanger matabiru</i>	226	100
mammal	<i>Phalanger matanim</i>	154	100
bird	<i>Phapitreron cinereiceps</i>	672	100
bird	<i>Phapitreron frontalis</i>	503	100
mammal	<i>Pharotis imogene</i>	541	100
amphibian	<i>Philautus jacobsoni</i>	213	100
amphibian	<i>Philautus sanctisilvaticus</i>	84	100
amphibian	<i>Phrynobatrachus asper</i>	7,970	42
amphibian	<i>Phrynobatrachus chukuchuku</i>	10	100
amphibian	<i>Phrynobatrachus danko</i>	10	100
amphibian	<i>Phrynobatrachus manengoubensis</i>	10	100
amphibian	<i>Phrynobatrachus pintoii</i>	388	100
amphibian	<i>Phrynopus barthlenae</i>	134	100
amphibian	<i>Phrynopus daemon</i>	19	100
amphibian	<i>Phrynopus heimorum</i>	10	100
amphibian	<i>Phrynopus horstpauli</i>	259	100
amphibian	<i>Phrynopus juninensis</i>	12	100

amphibian	<i>Phrynopus kauneorum</i>	309	100
amphibian	<i>Phrynopus montium</i>	25	100
amphibian	<i>Phrynopus peruanus</i>	10	100
amphibian	<i>Phrynopus vestigiatus</i>	67	100
bird	<i>Phyllastrephus viridiceps</i>	14,415	25
amphibian	<i>Phyllobates bicolor</i>	43	100
amphibian	<i>Phyllobates terribilis</i>	1,297	93
mammal	<i>Phyllomys brasiliensis</i>	2,874	70
bird	<i>Phylloscopus maforensis</i>	340	100
amphibian	<i>Pipa myersi</i>	165	100
mammal	<i>Pithecheir melanurus</i>	133	100
amphibian	<i>Pithecopus ayeaye</i>	91	100
amphibian	<i>Platymantis diesmosi</i>	95	100
amphibian	<i>Platymantis insulatus</i>	5	100
amphibian	<i>Platymantis spelaeus</i>	1,617	87
amphibian	<i>Plectrohyla calthula</i>	17	100
amphibian	<i>Plectrohyla ephemera</i>	3	100
amphibian	<i>Plectrohyla pycnochila</i>	30	100
amphibian	<i>Plectrohyla teuchestes</i>	15	100
mammal	<i>Plecturocebus caquetensis</i>	1,370	91
amphibian	<i>Plethodon cheoah</i>	157	100
bird	<i>Pomarea dimidiata</i>	99	100
bird	<i>Pomarea mendozae</i>	855	100
bird	<i>Pomarea mira</i>	110	100
bird	<i>Pomarea nigra</i>	28	100
bird	<i>Pomarea whitneyi</i>	83	100
bird	<i>Poodytes caudatus</i>	3	100
bird	<i>Prioniturus verticalis</i>	819	100
amphibian	<i>Pristimantis albericoi</i>	3	100
amphibian	<i>Pristimantis bounides</i>	20	100
amphibian	<i>Pristimantis colomai</i>	10	100
amphibian	<i>Pristimantis cordovae</i>	277	100
amphibian	<i>Pristimantis crenunguis</i>	4,822	56
amphibian	<i>Pristimantis delicatus</i>	53	100
amphibian	<i>Pristimantis diaphonus</i>	16	100
amphibian	<i>Pristimantis diogenes</i>	10	100
amphibian	<i>Pristimantis dissimulatus</i>	104	100
amphibian	<i>Pristimantis gentryi</i>	18	100
amphibian	<i>Pristimantis hamiotae</i>	2	100
amphibian	<i>Pristimantis jaime</i>	10	100
amphibian	<i>Pristimantis kelephus</i>	27	100
amphibian	<i>Pristimantis leopardus</i>	20	100
amphibian	<i>Pristimantis modipeplus</i>	443	100
amphibian	<i>Pristimantis mutabilis</i>	56	100
amphibian	<i>Pristimantis ornatus</i>	514	100
amphibian	<i>Pristimantis pardalinus</i>	23	100

amphibian	<i>Pristimantis pastazensis</i>	10	100
amphibian	<i>Pristimantis phalarus</i>	51	100
amphibian	<i>Pristimantis phragmipleuron</i>	10	100
amphibian	<i>Pristimantis pteridophilus</i>	1,201	95
amphibian	<i>Pristimantis quantus</i>	65	100
amphibian	<i>Pristimantis signifer</i>	85	100
amphibian	<i>Pristimantis simonbolivari</i>	18	100
amphibian	<i>Pristimantis sobetes</i>	160	100
amphibian	<i>Pristimantis thymalopsoides</i>	3	100
amphibian	<i>Pristimantis vidua</i>	167	100
amphibian	<i>Pristimantis xylochobates</i>	17	100
bird	<i>Procellaria westlandica</i>	18,830,940	10
mammal	<i>Propithecus tattersalli</i>	1,732	85
mammal	<i>Prosciurillus weberi</i>	1,836	83
bird	<i>Prosobonia parvirostris</i>	158	100
amphibian	<i>Pseudoeurycea ahuitzotl</i>	49	100
amphibian	<i>Pseudoeurycea anitae</i>	25	100
amphibian	<i>Pseudoeurycea aquatica</i>	9	100
amphibian	<i>Pseudoeurycea aurantia</i>	34	100
amphibian	<i>Pseudoeurycea cochranae</i>	1,663	86
amphibian	<i>Pseudoeurycea conanti</i>	47	100
amphibian	<i>Pseudoeurycea exspectata</i>	41	100
amphibian	<i>Pseudoeurycea juarezi</i>	137	100
amphibian	<i>Pseudoeurycea kuautli</i>	11	100
amphibian	<i>Pseudoeurycea mystax</i>	13	100
amphibian	<i>Pseudoeurycea obesa</i>	9	100
amphibian	<i>Pseudoeurycea ruficauda</i>	7	100
amphibian	<i>Pseudoeurycea saltator</i>	6	100
amphibian	<i>Pseudoeurycea tenchalli</i>	91	100
amphibian	<i>Pseudoeurycea teotepec</i>	98	100
amphibian	<i>Pseudoeurycea tlahcuiloh</i>	46	100
amphibian	<i>Pseudophilautus amboli</i>	91	100
amphibian	<i>Pseudophilautus mittermeieri</i>	15	100
amphibian	<i>Pseudophilautus papillosus</i>	2	100
amphibian	<i>Pseudophilautus pleurotaenia</i>	12	100
amphibian	<i>Pseudophilautus simba</i>	2	100
amphibian	<i>Pseudophilautus zorro</i>	20	100
amphibian	<i>Psychrophrynella ankohuma</i>	28	100
amphibian	<i>Psychrophrynella bagrecito</i>	45	100
amphibian	<i>Psychrophrynella illampu</i>	53	100
amphibian	<i>Psychrophrynella illimani</i>	8	100
amphibian	<i>Psychrophrynella pinguis</i>	118	100
amphibian	<i>Psychrophrynella quimsacruzis</i>	1,245	94
amphibian	<i>Psychrophrynella wettsteini</i>	64	100
mammal	<i>Pteralopex pulchra</i>	633	100
bird	<i>Pternistis ochropectus</i>	611	100

bird	<i>Pternistis swierstrai</i>	18,583	18
bird	<i>Pterodroma arminjoniana</i>	47,635,737	10
bird	<i>Pterodroma cahow</i>	15,899,543	10
mammal	<i>Pteropus cognatus</i>	3,126	68
mammal	<i>Pteropus faunulus</i>	581	100
mammal	<i>Pteropus fundatus</i>	326	100
mammal	<i>Pteropus molossinus</i>	349	100
mammal	<i>Pteropus nitendiensis</i>	515	100
mammal	<i>Pteropus rodricensis</i>	112	100
mammal	<i>Pteropus tuberculatus</i>	182	100
mammal	<i>Pteropus ualanus</i>	103	100
bird	<i>Ptilinopus chalcurus</i>	25	100
bird	<i>Ptilinopus chrysogaster</i>	384	100
bird	<i>Ptilinopus huttoni</i>	4	100
bird	<i>Ptilinopus rarotongensis</i>	75	100
amphibian	<i>Ptychohyla dendrophasma</i>	45	100
amphibian	<i>Ptychohyla leonhardschultzei</i>	1,130	97
amphibian	<i>Ptychohyla macrotympaum</i>	52	100
amphibian	<i>Ptychohyla sanctaerucis</i>	74	100
bird	<i>Puffinus myrtae</i>	126,128	10
mammal	<i>Punomys kofordi</i>	1,061	98
bird	<i>Pyrrhura orcesi</i>	750	100
amphibian	<i>Rana holtzi</i>	86	100
amphibian	<i>Rana tavasensis</i>	1,392	91
amphibian	<i>Raorchestes bobingeri</i>	42	100
amphibian	<i>Raorchestes chalazodes</i>	42	100
amphibian	<i>Raorchestes chlorosomma</i>	25	100
amphibian	<i>Raorchestes graminirupes</i>	42	100
amphibian	<i>Raorchestes kaikatti</i>	25	100
amphibian	<i>Raorchestes marki</i>	25	100
amphibian	<i>Raorchestes shillongensis</i>	80	100
mammal	<i>Rattus nikenii</i>	63	100
mammal	<i>Rattus ranjiniae</i>	56	100
mammal	<i>Rattus vandeuseni</i>	2,027	80
amphibian	<i>Rhacophorus arvalis</i>	794	100
amphibian	<i>Rhaebo olallai</i>	51	100
amphibian	<i>Rhinella amabilis</i>	7	100
amphibian	<i>Rhinella chavin</i>	76	100
amphibian	<i>Rhinella cristinae</i>	43	100
amphibian	<i>Rhinella nicefori</i>	621	100
amphibian	<i>Rhinella vellardi</i>	162	100
mammal	<i>Rhinolophus mabuensis</i>	22,180	13
mammal	<i>Rhinolophus madurensis</i>	4,960	55
mammal	<i>Rhinopithecus strykeri</i>	204	100
mammal	<i>Rhinopoma hadramauticum</i>	233	100
bird	<i>Rhipidura malaitae</i>	620	100

bird	<i>Rhodonessa caryophyllacea</i>	1	100
amphibian	<i>Rhombophryne longicrus</i>	385	100
mammal	<i>Rhynchocyton chrysopygus</i>	12	100
bird	<i>Rhyticeros narcondami</i>	7	100
bird	<i>Rukia ruki</i>	34	100
amphibian	<i>Sarcohyla calvicollina</i>	52	100
amphibian	<i>Sarcohyla cembra</i>	255	100
amphibian	<i>Sarcohyla chryses</i>	234	100
amphibian	<i>Sarcohyla crassa</i>	79	100
amphibian	<i>Sarcohyla cyanomma</i>	62	100
amphibian	<i>Sarcohyla pachyderma</i>	15	100
amphibian	<i>Sarcohyla psarosema</i>	11	100
amphibian	<i>Sarcohyla sabrina</i>	26	100
amphibian	<i>Sarcohyla thorectes</i>	342	100
amphibian	<i>Scinax peixotoi</i>	0	100
amphibian	<i>Sclerophrys perreti</i>	23	100
amphibian	<i>Scutiger muliensis</i>	2,794	71
bird	<i>Scytalopus robbinsi</i>	1,143	96
mammal	<i>Sicista armenica</i>	64	100
amphibian	<i>Silverstoneia dalyi</i>	2,371	76
bird	<i>Sitta insularis</i>	84	100
bird	<i>Sitta ledanti</i>	247	100
bird	<i>Sitta victoriae</i>	360	100
amphibian	<i>Smilisca dentata</i>	1,037	99
mammal	<i>Sorex sclateri</i>	34	100
amphibian	<i>Spinomantis nussbaumi</i>	10	100
amphibian	<i>Stefania ackawaio</i>	54	100
amphibian	<i>Stefania ayangannae</i>	54	100
amphibian	<i>Stefania coxi</i>	27	100
amphibian	<i>Strabomantis cadenai</i>	10	100
amphibian	<i>Strabomantis helonotus</i>	199	100
amphibian	<i>Stumpffia analamaina</i>	10	100
amphibian	<i>Stumpffia hara</i>	3	100
amphibian	<i>Stumpffia staffordi</i>	48	100
bird	<i>Symposiachrus ateralbus</i>	113	100
bird	<i>Symposiachrus boanensis</i>	14	100
bird	<i>Symposiachrus everetti</i>	172	100
bird	<i>Symposiachrus sacerdotum</i>	701	100
bird	<i>Synallaxis zimneri</i>	525	100
mammal	<i>Tarsius sangirensis</i>	560	100
mammal	<i>Tarsius tumpara</i>	232	100
amphibian	<i>Taruga fastigo</i>	3	100
amphibian	<i>Telmatobius contrerasi</i>	170	100
amphibian	<i>Telmatobius dankoi</i>	6	100
amphibian	<i>Telmatobius fronteriensis</i>	11	100
amphibian	<i>Telmatobius gigas</i>	58	100

amphibian	<i>Telmatobius hauthali</i>	100	100
amphibian	<i>Telmatobius hypselocephalus</i>	113	100
amphibian	<i>Telmatobius pefauri</i>	105	100
amphibian	<i>Telmatobius philippii</i>	151	100
amphibian	<i>Telmatobius pinguiculus</i>	933	100
amphibian	<i>Telmatobius pisanoi</i>	670	100
amphibian	<i>Telmatobius platycephalus</i>	235	100
amphibian	<i>Telmatobius punctatus</i>	612	100
amphibian	<i>Telmatobius schreiteri</i>	3,467	65
amphibian	<i>Telmatobius scrocchii</i>	318	100
amphibian	<i>Telmatobius stephani</i>	1,193	95
amphibian	<i>Telmatobius vellardi</i>	173	100
amphibian	<i>Telmatobius ventriflavum</i>	5	100
amphibian	<i>Telmatobius vilamensis</i>	310	100
amphibian	<i>Telmatobius zapahuirensis</i>	105	100
bird	<i>Thalassarche eremita</i>	51,537,074	10
bird	<i>Thalasseus bernsteini</i>	67	100
bird	<i>Thapsinillas platenae</i>	6	100
bird	<i>Thinornis novaeseelandiae</i>	5	100
amphibian	<i>Thorius arboreus</i>	24	100
amphibian	<i>Thorius aureus</i>	16	100
amphibian	<i>Thorius boreas</i>	141	100
amphibian	<i>Thorius grandis</i>	37	100
amphibian	<i>Thorius infernalis</i>	32	100
amphibian	<i>Thorius insperatus</i>	18	100
amphibian	<i>Thorius macdougalli</i>	20	100
amphibian	<i>Thorius minutissimus</i>	51	100
amphibian	<i>Thorius omiltemi</i>	37	100
amphibian	<i>Thorius pulmonaris</i>	46	100
amphibian	<i>Thorius schmidtii</i>	196	100
amphibian	<i>Thorius smithi</i>	9	100
amphibian	<i>Thorius spilogaster</i>	30	100
mammal	<i>Thylogale lanatus</i>	1,353	92
bird	<i>Todiramphus gambieri</i>	41	100
bird	<i>Todiramphus godeffroyi</i>	390	100
bird	<i>Todiramphus reichenbachii</i>	356	100
bird	<i>Todiramphus ruficollaris</i>	51	100
amphibian	<i>Truebella tothastes</i>	41	100
bird	<i>Turdus helleri</i>	190	100
bird	<i>Turdus ludoviciae</i>	12,177	30
mammal	<i>Tylomys tumbalensis</i>	94	100
mammal	<i>Tympanoctomys aureus</i>	17	100
mammal	<i>Tympanoctomys loschalchalerosorum</i>	30	100
amphibian	<i>Uperodon mormorata</i>	408	100
mammal	<i>Uromys vika</i>	75	100
bird	<i>Vini ultramarina</i>	336	100

amphibian	<i>Werneria iboundji</i>	10	100
amphibian	<i>Werneria tandyi</i>	233	100
amphibian	<i>Wolterstorffina chirioi</i>	1	100
amphibian	<i>Wolterstorffina mirei</i>	148	100
amphibian	<i>Xanthophryne tigerina</i>	13	100
amphibian	<i>Xenopus itombwensis</i>	400	100
amphibian	<i>Xenopus lenduensis</i>	8	100
amphibian	<i>Yunganastes ashkapara</i>	219	100
amphibian	<i>Yunganastes bisignatus</i>	281	100
bird	<i>Zoothera turipavae</i>	97	100
bird	<i>Zosterops nehrkorni</i>	15	100
bird	<i>Zosterops samoensis</i>	525	100
bird	<i>Zosterops splendidus</i>	146	100
mammal	<i>Zyzomys palatalis</i>	2,597	73

77 **Table S2** Protected area coverage (%) of terrestrial ecoregions in 2010 and 2019.

Ecoregion	Area (km ²)	Percent protected	
		2010	2019
Adelie Land tundra	177	0	0
Admiralty Islands lowland rain forests	2113	1	1
Aegean and Western Turkey sclerophyllous and mixed forests	133754	19	19
Afghan Mountains semi-desert	13713	1	1
Ahklun and Kilbuck Upland Tundra	50654	65	65
Alai-Western Tian Shan steppe	127805	5	5
Alashan Plateau semi-desert	674924	18	19
Alaska Peninsula montane taiga	48743	81	81
Alaska-St. Elias Range tundra	164683	45	45
Albany thickets	36818	4	14
Alberta-British Columbia foothills forests	121350	2	2
Albertine Rift montane forests	151504	13	13
Aldabra Island xeric scrub	160	20	20
Aleutian Islands tundra	12257	93	93
Al-Hajar foothill xeric woodlands and shrublands	46590	1	1
Al-Hajar montane woodlands and shrublands	2150	0	7
Allegheny Highlands forests	73290	2	2
Alps conifer and mixed forests	149823	32	32
Altai alpine meadow and tundra	90361	23	28
Altai montane forest and forest steppe	142769	9	14
Altai steppe and semi-desert	83126	3	3
Alto Parana Atlantic forests	485093	0	0
Amazon-Orinoco-Southern Caribbean mangroves	41162	56	64
Amsterdam-Saint Paul Islands temperate grasslands	69	52	52
Amur meadow steppe	123509	14	14
Anatolian conifer and deciduous mixed forests	86514	1	1
Andaman Islands rain forests	5731	4	4
Angolan montane forest-grassland	17359	0	0
Angolan mopane woodlands	192668	27	36
Angolan scarp savanna and woodlands	137036	6	6
Angolan wet miombo woodlands	449655	2	2
Antipodes Subantarctic Islands tundra	876	70	70
Appalachian mixed mesophytic forests	181776	3	3
Appalachian Piedmont forests	166497	1	1
Appalachian-Blue Ridge forests	163602	5	5
Appenine deciduous montane forests	16155	46	46

Apure-Villavicencio dry forests	68691	24	24
Arabian desert	819215	4	4
Arabian sand desert	717036	2	4
Arabian-Persian Gulf coastal plain desert	122019	2	4
Araucaria moist forests	216551	5	5
Aravalli west thorn scrub forests	489383	4	4
Araya and Paria xeric scrub	5293	5	5
Arctic coastal tundra	49783	4	4
Arctic foothills tundra	129689	21	21
Arizona Mountains forests	111185	10	10
Arnhem Land tropical savanna	159054	34	44
Ascension scrub and grasslands	94	10	12
Atacama desert	105406	2	2
Atlantic Coast restingas	7886	14	15
Atlantic coastal pine barrens	14324	19	19
Australian Alps montane grasslands	12354	33	65
Azerbaijan shrub desert and steppe	64160	6	6
Azores temperate mixed forests	2621	18	20
Badghyz and Karabil semi-desert	133906	3	3
Bahamian pineyards	6901	10	20
Bahamian-Antillean mangroves	22010	35	51
Bahia coastal forests	109917	9	9
Bahia interior forests	230479	2	4
Baja California desert	77886	62	62
Bajao dry forests	37574	0	0
Balkan mixed forests	224876	18	20
Balsas dry forests	62582	11	11
Baltic mixed forests	114329	32	32
Baluchistan xeric woodlands	289391	3	3
Banda Sea Islands moist deciduous forests	7545	13	14
Belizian pine savannas	2838	33	33
Beni savanna	126340	16	38
Beringia lowland tundra	152978	64	64
Beringia upland tundra	47024	20	20
Bermuda subtropical conifer forests	39	0	0
Biak-Numfoor rain forests	2829	17	18
Blue Mountains forests	70916	10	10
Bohai Sea saline meadow	11584	20	21
Bolivian montane dry forests	73167	14	14
Bolivian Yungas	90748	49	49
Borneo lowland rain forests	428438	8	8
Borneo montane rain forests	119599	25	25
Borneo peat swamp forests	67622	13	13
Brahmaputra Valley semi-evergreen forests	56840	5	5
Brazilian Atlantic dry forests	115359	8	8

Brigalow tropical savanna	410678	4	5
British Columbia coastal conifer forests	110736	22	22
Brooks-British Range tundra	159831	63	63
Buru rain forests	8643	1	1
Caatinga	736002	6	6
Caatinga Enclaves moist forests	4808	28	28
Caledon conifer forests	22051	46	46
California Central Valley grasslands	46574	5	5
California coastal sage and chaparral	32968	5	6
California interior chaparral and woodlands	72098	6	7
California montane chaparral and woodlands	19891	27	27
Cameroon Highlands forests	38128	7	7
Campos Rupestres montane savanna	26451	27	27
Canadian Aspen forests and parklands	327343	3	3
Canadian High Arctic tundra	645968	8	9
Canadian Low Arctic tundra	837267	16	16
Canadian Middle Arctic Tundra	981099	7	7
Canary Islands dry woodlands and forests	4985	49	49
Cantabrian mixed forests	96313	26	26
Canterbury-Otago tussock grasslands	53600	8	9
Cape Verde Islands dry forests	4574	2	2
Cape York Peninsula tropical savanna	123293	16	34
Caqueta moist forests	184593	33	33
Cardamom Mountains rain forests	44345	42	42
Caribbean shrublands	3136	25	27
Carnarvon xeric shrublands	84677	7	7
Carolines tropical moist forests	582	0	0
Carpathian montane forests	125251	37	39
Carpentaria tropical savanna	368033	4	14
Caspian Hyrcanian mixed forests	55229	12	12
Caspian lowland desert	267902	7	7
Catatumbo moist forests	22898	47	47
Cauca Valley dry forests	7361	0	2
Cauca Valley montane forests	32127	9	13
Caucasus mixed forests	170663	17	18
Cayos Miskitos-San Andres and Providencia moist forests	95	0	0
Celtic broadleaf forests	209614	20	20
Central Afghan Mountains xeric woodlands	139709	0	0
Central African mangroves	30992	16	18
Central American Atlantic moist forests	89978	46	47
Central American dry forests	68181	10	10
Central American montane forests	13329	45	45

Central American pine-oak forests	111592	12	13
Central Anatolian steppe	24971	0	0
Central Anatolian steppe and woodlands	101641	0	0
Central Andean dry puna	256198	16	16
Central Andean puna	212540	31	32
Central Andean wet puna	117574	18	18
Central Asian northern desert	663900	2	2
Central Asian riparian woodlands	88833	9	12
Central Asian southern desert	567973	2	2
Central British Columbia Mountain forests	139729	6	6
Central bushveld	156376	17	20
Central Canadian Shield forests	271355	8	9
Central China Loess Plateau mixed forests	360435	4	4
Central Congolian lowland forests	415657	21	22
Central Deccan Plateau dry deciduous forests	240685	4	4
Central European mixed forests	732907	19	20
Central Indochina dry forests	320779	10	10
Central Korean deciduous forests	104793	8	8
Central Mexican matorral	59487	5	5
Central Pacific Northwest coastal forests	77453	13	13
Central Persian desert basins	582193	9	12
Central Polynesian tropical moist forests	616	6	6
Central Range Papuan montane rain forests	172365	14	14
Central Ranges xeric scrub	288674	20	34
Central South Antarctic Peninsula tundra	4934	0	0
Central Tallgrass prairie	342780	1	1
Central Tibetan Plateau alpine steppe	630874	42	47
Central US forest-grasslands transition	228583	2	2
Central Zambezian wet miombo woodlands	1024261	21	23
Central-Southern Cascades Forests	58870	18	18
Central-Southern US mixed grasslands	275449	1	1
Cerrado	1921063	11	11
Changbai Mountains mixed forests	93509	5	5
Changjiang Plain evergreen forests	438996	7	7
Chao Phraya freshwater swamp forests	39086	1	1
Chao Phraya lowland moist deciduous forests	20459	14	14
Chatham Island temperate forests	806	4	5
Cherskii-Kolyma mountain tundra	558030	13	13
Chhota-Nagpur dry deciduous forests	122693	6	6
Chiapas Depression dry forests	14053	3	3

Chiapas montane forests	5791	5	5
Chihuahuan desert	503623	7	8
Chilean Matorral	148840	1	1
Chimalapas montane forests	2088	14	14
Chin Hills-Arakan Yoma montane forests	29762	10	10
Chiquitano dry forests	231075	24	24
Choco-Darien moist forests	73788	0	0
Christmas and Cocos Islands tropical forests	135	8	8
Chukchi Peninsula tundra	298986	10	10
Clipperton Island shrub and grasslands	29	0	0
Cocos Island moist forests	25	92	92
Colorado Plateau shrublands	283960	11	11
Colorado Rockies forests	145915	14	14
Comoros forests	2068	9	9
Congolian coastal forests	190089	25	27
Cook Inlet taiga	27941	31	31
Cook Islands tropical moist forests	213	0	2
Coolgardie woodlands	129521	11	11
Copper Plateau taiga	17192	30	30
Cordillera Central paramo	12199	0	0
Cordillera de Merida paramo	2816	0	0
Cordillera La Costa montane forests	14372	72	72
Cordillera Oriental montane forests	68021	25	28
Corsican montane broadleaf and mixed forests	3636	78	78
Costa Rican seasonal moist forests	10721	11	11
Crete Mediterranean forests	8211	34	34
Crimean Submediterranean forest complex	30218	10	10
Cross-Niger transition forests	20765	2	2
Cross-Sanaga-Bioko coastal forests	52183	19	19
Cross-Timbers savanna-woodland	88419	1	1
Cuban cactus scrub	3272	21	21
Cuban dry forests	66067	6	6
Cuban moist forests	21445	19	21
Cuban pine forests	6436	7	7
Cuban wetlands	5674	62	62
Cyprus Mediterranean forests	9294	18	36
Da Hinggan-Dzhagdy Mountains conifer forests	248877	15	16
Daba Mountains evergreen forests	168678	7	7
Daurian forest steppe	209403	4	5
Davis Highlands tundra	98050	28	29
Deccan thorn scrub forests	341003	3	3
Dinaric Mountains mixed forests	58299	14	23
Djibouti xeric shrublands	238175	17	17

Drakensberg Escarpment savanna and thicket	35082	0	1
Drakensberg grasslands	115165	4	4
Dronning Maud Land tundra	5470	0	0
Dry Chaco	790165	15	16
Dry miombo woodlands	1192635	27	28
East Afghan montane conifer forests	20128	4	4
East African halophytics	3800	43	43
East African mangroves	2209	46	48
East African montane forests	61897	29	29
East African montane moorlands	3110	91	91
East Antarctic tundra	1081	0	0
East Arabian fog shrublands and sand desert	17694	8	8
East Central Texas forests	55930	0	0
East Deccan dry-evergreen forests	25589	2	2
East Deccan moist deciduous forests	341898	5	5
East European forest steppe	728842	5	5
East Sahara Desert	1544404	5	5
East Saharan montane xeric woodlands	27933	0	50
East Siberian taiga	3908788	7	7
East Sudanian savanna	1062141	24	24
Eastern Anatolian deciduous forests	81748	0	0
Eastern Anatolian montane steppe	168625	5	5
Eastern Arc forests	11224	26	26
Eastern Australia mulga shrublands	252838	4	5
Eastern Australian temperate forests	296015	14	19
Eastern Canadian Forest-Boreal transition	318716	10	10
Eastern Canadian forests	465148	8	9
Eastern Canadian Shield taiga	756261	5	10
Eastern Cascades forests	53282	7	7
Eastern Congolian swamp forests	92937	26	28
Eastern Cordillera Real montane forests	102745	17	19
Eastern Gobi desert steppe	282448	4	4
Eastern Great Lakes lowland forests	129960	1	1
Eastern Guinean forests	190135	22	22
Eastern Himalayan alpine shrub and meadows	121457	39	39
Eastern Himalayan broadleaf forests	83234	14	14
Eastern Himalayan subalpine conifer forests	27540	37	37
Eastern Java-Bali montane rain forests	15932	10	10
Eastern Java-Bali rain forests	54016	3	3
Eastern Mediterranean conifer-broadleaf forests	142872	1	1
Eastern Micronesia tropical moist forests	534	2	2

Eastern Panamanian montane forests	3051	71	71
Ecuadorian dry forests	21330	2	3
Edwards Plateau savanna	75207	1	1
Einasleigh upland savanna	116881	4	7
Elburz Range forest steppe	63407	10	10
Ellsworth Land tundra	218	0	0
Ellsworth Mountains tundra	2946	0	0
Emin Valley steppe	65117	15	15
Enderby Land tundra	2142	0	0
English Lowlands beech forests	45701	31	31
Enriquillo wetlands	632	55	63
Eritrean coastal desert	4604	0	0
Esperance mallee	103466	21	21
Espinal	299482	2	2
Ethiopian montane forests	68102	11	11
Ethiopian montane grasslands and woodlands	222529	9	9
Ethiopian montane moorlands	15730	35	35
Etosha Pan halophytics	7732	96	97
European Atlantic mixed forests	386143	19	20
Euxine-Colchic broadleaf forests	74581	1	1
Everglades flooded grasslands	19889	14	14
Eyre and York mallee	61366	13	15
Faroe Islands boreal grasslands	1451	0	0
Fernando de Noronha-Atol das Rocas moist forests	19	83	83
Fiji tropical dry forests	6928	3	3
Fiji tropical moist forests	11635	5	5
Fiordland temperate forests	11053	96	96
Flinders-Lofty montane woodlands	66351	7	9
Flint Hills tallgrass prairie	27977	2	2
Fraser Plateau and Basin conifer forests	104499	15	15
Fynbos shrubland	53809	38	54
Galapagos Islands xeric scrub	8032	0	0
Gariep Karoo	252629	5	5
Ghorat-Hazarajat alpine meadow	66646	1	1
Gibson desert	156985	36	59
Gissaro-Alai open woodlands	168399	8	9
Gobi Lakes Valley desert steppe	139700	4	4
Godavari-Krishna mangroves	7019	12	12
Granitic Seychelles forests	310	6	6
Great Basin montane forests	8913	50	50
Great Basin shrub steppe	301268	8	8
Great Lakes Basin desert steppe	157570	20	20
Great Sandy-Tanami desert	827851	10	38
Great Victoria desert	424022	27	31
Greater Negros-Panay rain forests	35074	9	9

Guajira-Barranquilla xeric scrub	31674	4	6
Guayaquil flooded grasslands	2944	2	2
Guianan freshwater swamp forests	7741	8	8
Guianan Highlands moist forests	146933	71	71
Guianan lowland moist forests	479320	32	34
Guianan piedmont moist forests	231365	79	79
Guianan savanna	105195	51	51
Guinean forest-savanna	675086	16	16
Guinean mangroves	23568	20	22
Guinean montane forests	31119	35	35
Guizhou Plateau broadleaf and mixed forests	270139	10	10
Gulf of California xeric scrub	23632	52	53
Gulf of St. Lawrence lowland forests	36245	2	3
Gurupa varzea	9947	0	0
Hainan Island monsoon rain forests	15571	9	9
Halmahera rain forests	26925	8	8
Hampton mallee and woodlands	10914	11	15
Hawai'i tropical dry forests	6648	16	16
Hawai'i tropical high shrublands	1857	43	43
Hawai'i tropical low shrublands	1525	9	9
Hawai'i tropical moist forests	6752	13	13
Helanshan montane conifer forests	24741	31	31
Hengduan Mountains subalpine conifer forests	99641	11	11
High Monte	116983	14	14
Highveld grasslands	242558	4	5
Himalayan subtropical broadleaf forests	38271	13	13
Himalayan subtropical pine forests	76371	5	5
Hindu Kush alpine meadow	28326	0	0
Hispaniolan dry forests	15528	22	22
Hispaniolan moist forests	46057	8	10
Hispaniolan pine forests	11622	36	38
Hobyo grasslands and shrublands	13478	0	0
Hokkaido deciduous forests	38152	18	18
Hokkaido montane conifer forests	45868	26	26
Honshu alpine conifer forests	11523	50	50
Horn of Africa xeric bushlands	231993	0	0
Huang He Plain mixed forests	435174	3	3
Humid Chaco	292777	7	7
Humid Pampas	399423	2	3
Huon Peninsula montane rain forests	16558	0	0
Iberian conifer forests	34502	44	45
Iberian sclerophyllous and semi-deciduous forests	298323	25	25
Iceland boreal birch forests and alpine tundra	91681	12	12

Ile Europa and Bassas da India xeric scrub	22	0	39
Illyrian deciduous forests	40665	14	22
Indochina mangroves	26929	6	6
Indus River Delta-Arabian Sea mangroves	6018	25	25
Indus Valley desert	19540	63	63
Inner Niger Delta flooded savanna	46133	50	50
Interior Alaska-Yukon lowland taiga	424475	35	35
Interior Plateau US Hardwood Forests	123757	3	3
Interior Yukon-Alaska alpine tundra	152937	24	24
Iquitos varzea	115258	0	0
Irrawaddy dry forests	35164	1	1
Irrawaddy freshwater swamp forests	15192	0	0
Irrawaddy moist deciduous forests	138593	3	4
Islas Revillagigedo dry forests	215	64	64
Isthmian-Atlantic moist forests	58727	35	35
Isthmian-Pacific moist forests	29364	11	11
Italian sclerophyllous and semi-deciduous forests	102278	18	18
Itigi-Sumbu thicket	11069	46	46
Jalisco dry forests	26186	9	9
Jamaican dry forests	2322	19	19
Jamaican moist forests	8314	13	13
Japura-Solimoes-Negro moist forests	270250	0	0
Jarra-Karri forest and shrublands	8468	46	46
Jian Nan subtropical evergreen forests	665038	5	5
Jos Plateau forest-grassland	13366	9	9
Juan Fernandez Islands temperate forests	146	0	0
Junggar Basin semi-desert	304898	11	11
Jurua-Purus moist forests	243089	0	0
Kalaallit Nunaat Arctic steppe	327400	30	31
Kalaallit Nunaat High Arctic tundra	148333	69	69
Kalahari Acacia woodlands	106956	53	57
Kalahari xeric savanna	688632	17	17
Kamchatka taiga	15256	18	18
Kamchatka tundra	119568	21	21
Kamchatka-Kurile meadows and sparse forests	146770	18	18
Kaokoveld desert	33338	85	95
Karakoram-West Tibetan Plateau alpine steppe	143602	18	18
Kayah-Karen montane rain forests	119802	27	27
Kazakh forest steppe	421464	12	12
Kazakh semi-desert	679944	1	1
Kazakh steppe	806306	2	2
Kazakh upland steppe	72113	3	3

Kermadec Islands subtropical moist forests	34	83	83
Khangai Mountains alpine meadow	37147	31	34
Khangai Mountains conifer forests	2900	44	44
Khathiar-Gir dry deciduous forests	267563	4	4
Kimberly tropical savanna	340414	10	31
Kinabalu montane alpine meadows	601	79	79
Klamath-Siskiyou forests	48400	16	16
Knysna-Amatole montane forests	2073	37	37
Kola Peninsula tundra	58896	8	8
Kopet Dag semi-desert	26326	0	0
Kopet Dag woodlands and forest steppe	58416	5	5
Kuh Rud and Eastern Iran montane woodlands	126623	2	2
Kwazulu Natal-Cape coastal forests	11015	3	3
La Costa xeric shrublands	68615	62	62
Lake Chad flooded savanna	32181	52	57
Lara-Falcon dry forests	16975	0	0
Leeward Islands moist forests	992	72	72
Lesser Antillean dry forests	640	13	17
Lesser Sundas deciduous forests	39534	8	9
Limpopo lowveld	82382	31	33
Llanos	378245	14	14
Lord Howe Island subtropical forests	14	72	72
Louisiade Archipelago rain forests	1618	0	0
Low Monte	354192	5	7
Lower Gangetic Plains moist deciduous forests	254620	2	2
Luang Prabang montane rain forests	71970	18	18
Luzon montane rain forests	8320	46	46
Luzon rain forests	95421	11	11
Luzon tropical pine forests	7092	19	19
Madagascar dry deciduous forests	152407	3	4
Madagascar ericoid thickets	1280	11	11
Madagascar humid forests	112351	8	8
Madagascar mangroves	5216	1	6
Madagascar spiny thickets	43487	6	7
Madagascar subhumid forests	200021	6	6
Madagascar succulent woodlands	79875	2	2
Madeira evergreen forests	817	57	57
Madeira-Tapajos moist forests	721256	0	0
Madeira-Tapajos moist forests	11397	0	0
Magdalena Valley dry forests	19679	2	2
Magdalena Valley montane forests	105289	13	15
Magdalena-Uraba moist forests	76934	0	0
Magellanic subpolar forests	164400	38	53
Makgadikgadi halophytics	17681	19	19

Malabar Coast moist forests	35543	3	3
Maldives-Lakshadweep-Chagos Archipelago tropical moist forests	546	4	4
Malpelo Island xeric scrub	8	0	0
Manchurian mixed forests	505153	10	11
Mandara Plateau woodlands	7526	0	0
Maputaland coastal forests and woodlands	30269	15	15
Maracaibo dry forests	30275	32	32
Marajo varzea	88899	0	0
Maranhao Babacu forests	142579	0	0
Marianas tropical dry forests	1038	15	15
Marie Byrd Land tundra	1151	0	0
Marquesas tropical moist forests	1081	2	2
Masai xeric grasslands and shrublands	74977	6	6
Mascarene forests	4957	34	34
Mato Grosso tropical dry forests	414912	25	25
Mediterranean Acacia-Argania dry woodlands and succulent thickets	100305	3	18
Mediterranean conifer and mixed forests	23149	12	20
Mediterranean dry woodlands and steppe	292849	4	19
Mediterranean High Atlas juniper steppe	6347	8	26
Mediterranean woodlands and forests	359096	4	8
Meghalaya subtropical forests	41804	1	1
Mentawai Islands rain forests	6513	30	30
Meseta Central matorral	125544	5	5
Mesoamerican Gulf-Caribbean mangroves	26803	54	55
Mesopotamian shrub desert	204975	0	1
Mid-Atlantic US coastal savannas	78646	11	11
Mid-Canada Boreal Plains forests	568467	6	6
Midwest Canadian Shield forests	755467	6	10
Mindanao montane rain forests	18238	23	24
Mindanao-Eastern Visayas rain forests	105339	9	9
Mindoro rain forests	10140	16	16
Miskito pine forests	18965	22	22
Mississippi lowland forests	116433	7	7
Mitchell Grass Downs	474197	2	2
Mizoram-Manipur-Kachin rain forests	135857	8	9
Mojave desert	127613	46	46
Mongolian-Manchurian grassland	889317	9	10
Montana Valley and Foothill grasslands	100042	3	3
Monte Alegre varzea	66947	0	0
Motagua Valley thornscrub	2342	19	19

Mount Cameroon and Bioko montane forests	1149	61	61
Mulanje Montane forest-grassland	946	74	74
Murray-Darling woodlands and mallee	208217	13	17
Muskwa-Slave Lake taiga	297918	20	20
Myanmar Coast mangroves	21361	6	6
Myanmar coastal rain forests	66696	6	6
Nama Karoo shrublands	162242	1	3
Namaqualand-Richtersveld steppe	53037	38	38
Namib Desert	79587	91	91
Namibian savanna woodlands	103328	40	42
Nansei Islands subtropical evergreen forests	4079	25	27
Napo moist forests	252273	26	33
Naracoorte woodlands	24628	8	9
Narmada Valley dry deciduous forests	170257	4	4
Nebraska Sand Hills mixed grasslands	59164	1	1
Negro-Branco moist forests	202280	33	35
Nelson Coast temperate forests	14608	78	78
Nenjiang River grassland	23252	5	7
New Britain-New Ireland lowland rain forests	35147	3	3
New Britain-New Ireland montane rain forests	12161	1	1
New Caledonia dry forests	4430	53	53
New Caledonia rain forests	14595	50	52
New England-Acadian forests	334352	8	9
New Guinea mangroves	26876	20	21
New Zealand North Island temperate forests	84615	16	19
New Zealand South Island montane grasslands	40019	63	64
New Zealand South Island temperate forests	11711	20	20
Nicobar Islands rain forests	1699	46	46
Niger Delta swamp forests	14438	8	8
Nigerian lowland forests	67482	17	17
Nihonkai evergreen forests	21681	20	20
Nihonkai montane deciduous forests	82487	31	32
Nile Delta flooded savanna	50940	1	1
Norfolk Island subtropical forests	42	7	20
North Arabian desert	469108	10	11
North Arabian highland shrublands	8112	0	0
North Atlantic moist mixed forests	38601	33	34
North Cascades conifer forests	35242	41	41
North Deccan dry deciduous forests	58450	3	3
North Saharan Xeric Steppe and Woodland	1604169	3	5
North Tibetan Plateau-Kunlun Mountains alpine desert	375267	59	64

North Victoria Land tundra	9470	0	0
North Western Ghats moist deciduous forests	48309	4	5
North Western Ghats montane rain forests	31003	14	17
Northeast Antarctic Peninsula tundra	1137	0	0
Northeast Brazil restingas	10078	68	69
Northeast China Plain deciduous forests	232981	4	4
Northeast Congolian lowland forests	515744	11	11
Northeast Himalayan subalpine conifer forests	46381	17	17
Northeast India-Myanmar pine forests	9727	0	0
Northeast Siberian coastal tundra	223095	23	23
Northeast Siberian taiga	1128415	11	11
Northeast Spain and Southern France Mediterranean forests	90902	38	41
Northeast US Coastal forests	73500	3	3
Northern Acacia-Commiphora bushlands and thickets	367262	18	18
Northern Anatolian conifer and deciduous forests	101519	0	0
Northern Andean paramo	30010	0	0
Northern Annamites rain forests	47311	30	31
Northern California coastal forests	13610	19	20
Northern Canadian Shield taiga	630563	5	5
Northern Congolian Forest-Savanna	707658	15	15
Northern Cordillera forests	168880	23	27
Northern Indochina subtropical forests	437970	7	7
Northern Khorat Plateau moist deciduous forests	16886	2	2
Northern Mesoamerican Pacific mangroves	8212	44	47
Northern New Guinea lowland rain and freshwater swamp forests	135536	12	12
Northern New Guinea montane rain forests	23339	15	15
Northern Pacific Alaskan coastal forests	64126	40	40
Northern Rockies conifer forests	283922	23	24
Northern Shortgrass prairie	718938	4	4
Northern Swahili coastal forests	144378	13	14
Northern Tallgrass prairie	82847	4	4
Northern Thailand-Laos moist deciduous forests	42236	20	20
Northern Triangle subtropical forests	53993	35	36
Northern Triangle temperate forests	10750	41	41
Northern Vietnam lowland rain forests	22643	4	7
Northland temperate kauri forests	29997	10	11
Northwest Andean montane forests	81346	11	15
Northwest Antarctic Peninsula tundra	5059	0	0

Northwest Congolian lowland forests	435086	19	22
Northwest Hawai'i scrub	15	50	50
Northwest Iberian montane forests	57452	28	28
Northwest Russian-Novaya Zemlya tundra	284899	7	7
Northwest Territories taiga	332899	2	2
Northwestern Himalayan alpine shrub and meadows	49515	11	12
Novosibirsk Islands Arctic desert	37032	94	94
Nujiang Langcang Gorge alpine conifer and mixed forests	82993	23	23
Nullarbor Plains xeric shrublands	197864	27	32
Nyanga-Chimanimani Montane forest-grassland	7746	11	11
Oaxacan montane forests	7618	3	3
Ogasawara subtropical moist forests	97	28	28
Ogilvie-MacKenzie alpine tundra	301710	11	13
Okanogan dry forests	52571	6	7
Okhotsk-Manchurian taiga	402909	8	8
Ordos Plateau steppe	215952	4	4
Orinoco Delta swamp forests	28208	57	58
Orinoco wetlands	6027	41	41
Orissa semi-evergreen forests	22342	7	7
Ozark Highlands mixed forests	106585	4	4
Ozark Mountain forests	69654	12	12
Pacific Coastal Mountain icefields and tundra	106320	42	42
Palau tropical moist forests	463	12	16
Palawan rain forests	14369	81	81
Palouse prairie	83892	4	4
Pamir alpine desert and tundra	118222	19	21
Panamanian dry forests	5120	1	1
Pannonian mixed forests	307595	18	22
Pantanal	171429	17	17
Pantanos de Centla	17246	34	34
Pantepui forests & shrublands	51012	82	82
Papuan Central Range sub-alpine grasslands	15606	39	39
Paraguana xeric scrub	16009	0	0
Parana flooded savanna	37207	0	0
Paropamisus xeric woodlands	92803	0	0
Patagonian steppe	576571	6	9
Patia valley dry forests	2276	0	0
Peninsular Malaysian montane rain forests	17211	32	32
Peninsular Malaysian peat swamp forests	3634	3	3
Peninsular Malaysian rain forests	125777	15	15
Pernambuco coastal forests	17614	11	11
Pernambuco interior forests	22742	3	3

Peruvian Yungas	187123	14	16
Peten-Veracruz moist forests	149421	0	0
Pilbara shrublands	179098	6	6
Pindus Mountains mixed forests	39628	33	33
Piney Woods	152574	3	3
Po Basin mixed forests	42459	8	8
Pontic steppe	996294	5	5
Prince Charles Mountains tundra	5999	0	0
Puerto Rican dry forests	1278	12	12
Puerto Rican moist forests	7545	5	5
Puget lowland forests	36152	9	9
Purus varzea	177936	0	0
Purus-Madeira moist forests	174393	59	59
Pyrenees conifer and mixed forests	25944	58	58
Qaidam Basin semi-desert	192470	10	10
Qilian Mountains conifer forests	16690	21	21
Qilian Mountains subalpine meadows	73393	25	25
Qin Ling Mountains deciduous forests	123602	10	10
Qionglai-Minshan conifer forests	80394	21	21
Queen Charlotte Islands conifer forests	10221	45	45
Queensland tropical rain forests	34715	35	42
Rakiura Island temperate forests	1694	76	76
Rann of Kutch seasonal salt marsh	27965	74	74
Rapa Nui and Sala y Gómez subtropical forests	179	0	0
Red River freshwater swamp forests	10778	1	1
Red Sea coastal desert	59085	26	26
Red Sea mangroves	1166	1	1
Red Sea-Arabian Desert shrublands	315393	2	2
Registan-North Pakistan sandy desert	277916	1	1
Renosterveld shrubland	28440	7	31
Richmond temperate forests	13227	37	37
Rio Negro campinarana	96632	62	65
Rock and Ice	14111333	5	5
Rodope montane mixed forests	31707	59	59
Russian Arctic desert	161815	32	32
Russian Bering tundra	475340	9	9
Rwenzori-Virunga montane moorlands	520	99	99
Saharan Atlantic coastal desert	40009	18	18
Saharan halophytics	54025	25	25
Sahelian Acacia savanna	3689918	8	10
Sakhalin Island taiga	68856	5	5
Samoan tropical moist forests	3101	6	7
San Felix-San Ambrosio Islands temperate forests	7	0	0
San Lucan xeric scrub	3885	20	20

Santa Lucia Montane Chaparral & Woodlands	4718	28	28
Santa Marta montane forests	4795	46	46
Santa Marta paramo	1246	0	0
Sao Tome, Principe, and Annobon forests	1039	0	0
Sarmatic mixed forests	848071	10	10
Sayan alpine meadows and tundra	81085	16	25
Sayan Intermontane steppe	34012	9	10
Sayan montane conifer forests	358213	16	19
Scandinavian and Russian taiga	2161976	8	9
Scandinavian coastal conifer forests	19463	4	4
Scandinavian Montane Birch forest and grasslands	243811	29	31
Scotia Sea Islands tundra	8130	0	46
Sechura desert	185317	4	4
Selenge-Orkhon forest steppe	228159	4	5
Seram rain forests	19405	10	10
Serengeti volcanic grasslands	126	87	87
Serra do Mar coastal forests	105069	33	34
Sichuan Basin evergreen broadleaf forests	98336	4	4
Sierra de la Laguna dry forests	3993	29	29
Sierra de la Laguna pine-oak forests	1066	87	87
Sierra de los Tuxtlas	3911	39	39
Sierra Madre de Chiapas moist forests	11283	17	17
Sierra Madre de Oaxaca pine-oak forests	14378	6	7
Sierra Madre del Sur pine-oak forests	61311	2	3
Sierra Madre Occidental pine-oak forests	217326	13	14
Sierra Madre Oriental pine-oak forests	65472	30	32
Sierra Nevada forests	53190	33	33
Simpson desert	586326	17	22
Sinaloan dry forests	77707	12	12
Sinu Valley dry forests	25037	0	0
Snake-Columbia shrub steppe	193296	16	16
Society Islands tropical moist forests	1629	2	2
Socotra Island xeric shrublands	3826	89	89
Solimoës-Japura moist forests	168052	0	0
Solomon Islands rain forests	35930	1	1
Somali Acacia-Commiphora bushlands and thickets	756428	13	13
Somali montane xeric woodlands	64010	0	0
Sonoran desert	225154	17	17
Sonoran-Sinaloan subtropical dry forest	51095	6	6
South American Pacific mangroves	13551	14	20
South Antarctic Peninsula tundra	2973	0	0

South Apennine mixed montane forests	13112	46	46
South Arabian fog woodlands, shrublands, and dune	19586	4	4
South Arabian plains and plateau desert	373278	1	1
South Central Rockies forests	176770	31	31
South China Sea Islands	31	0	0
South China-Vietnam subtropical evergreen forests	224800	6	6
South Deccan Plateau dry deciduous forests	82432	9	9
South Iran Nubo-Sindian desert and semi-desert	352234	6	7
South Orkney Islands tundra	148	0	0
South Sahara desert	2929594	4	6
South Siberian forest steppe	162232	6	6
South Taiwan monsoon rain forests	2582	12	13
South Victoria Land tundra	10305	0	0
South Western Ghats moist deciduous forests	23824	23	28
South Western Ghats montane rain forests	22686	16	26
Southeast Australia temperate forests	189119	7	10
Southeast Australia temperate savanna	278692	2	4
Southeast Iberian shrubs and woodlands	2873	34	34
Southeast Indochina dry evergreen forests	124530	22	23
Southeast Papuan rain forests	77529	1	1
Southeast Tibet shrublands and meadows	461851	33	35
Southeast US conifer savannas	522829	4	4
Southeast US mixed woodlands and savannas	28	23	23
Southern Acacia-Commiphora bushlands and thickets	235433	34	34
Southern Africa mangroves	996	21	21
Southern Anatolian montane conifer and deciduous forests	76619	0	0
Southern Andean steppe	125190	22	24
Southern Andean Yungas	75508	25	25
Southern Annamites montane rain forests	46588	16	20
Southern Atlantic Brazilian mangroves	10080	26	26
Southern Cone Mesopotamian savanna	26963	1	1
Southern Congolian forest-savanna	569544	4	4
Southern Great Lakes forests	228137	1	1
Southern Hudson Bay taiga	372556	12	12
Southern Indian Ocean Islands tundra	8171	87	88
Southern Korea evergreen forests	14759	17	17

Southern Mesoamerican Pacific mangroves	7874	40	41
Southern New Guinea freshwater swamp forests	100142	9	9
Southern New Guinea lowland rain forests	123143	5	5
Southern Pacific dry forests	42520	5	5
Southern Rift Montane forest-grassland	22412	16	16
Southern Swahili coastal forests and woodlands	149909	9	14
Southern Vietnam lowland dry forests	35114	5	6
Southwest Amazon moist forests	751379	36	40
Southwest Arabian coastal xeric shrublands	41545	2	2
Southwest Arabian Escarpment shrublands and woodlands	100864	5	5
Southwest Arabian highland xeric scrub	32710	0	0
Southwest Arabian montane woodlands and grasslands	28448	6	6
Southwest Australia savanna	178068	10	10
Southwest Australia woodlands	60515	13	13
Southwest Borneo freshwater swamp forests	36849	14	15
Southwest Iberian Mediterranean sclerophyllous and mixed forests	71237	22	22
Sri Lanka dry-zone dry evergreen forests	48526	26	36
Sri Lanka lowland rain forests	12582	8	9
Sri Lanka montane rain forests	3086	19	20
St. Helena scrub and woodlands	131	0	0
St. Peter and St. Paul Rocks	6	0	0
Succulent Karoo xeric shrublands	57190	5	22
Sudd flooded grasslands	189332	24	24
Suiphun-Khanka meadows and forest meadows	33825	22	24
Sulaiman Range alpine meadows	23924	1	1
Sulawesi lowland rain forests	116586	7	7
Sulawesi montane rain forests	75978	15	15
Sulu Archipelago rain forests	2341	0	0
Sumatran freshwater swamp forests	18116	4	4
Sumatran lowland rain forests	260019	7	7
Sumatran montane rain forests	73104	32	32
Sumatran peat swamp forests	87706	7	8
Sumatran tropical pine forests	2766	40	40
Sumba deciduous forests	10789	12	12
Sunda Shelf mangroves	37529	15	15
Sundaland heath forests	76718	10	10
Sundarbans freshwater swamp forests	14593	1	1
Sundarbans mangroves	20481	27	27

Syrian xeric grasslands and shrublands	138254	1	1
Taiheiyō evergreen forests	138605	27	28
Taiheiyō montane deciduous forests	41999	29	30
Taimyr-Central Siberian tundra	956949	13	13
Taiwan subtropical evergreen forests	33474	20	20
Taklimakan desert	743534	12	12
Talamancan montane forests	16378	60	60
Tamaulipan matorral	16307	6	6
Tamaulipan mezquital	125574	9	9
Tapajos-Xingu moist forests	337305	0	0
Tarim Basin deciduous forests and steppe	54595	7	7
Tasmanian Central Highland forests	11842	38	42
Tasmanian temperate forests	23287	13	20
Tasmanian temperate rain forests	33733	44	58
Tehuacan Valley matorral	9914	0	0
Tenasserim-South Thailand semi-evergreen rain forests	97539	22	22
Terai-Duar savanna and grasslands	34657	13	13
Texas blackland prairies	43514	0	0
Thar desert	239183	18	18
Tian Shan foothill arid steppe	129285	8	8
Tian Shan montane conifer forests	27582	8	10
Tian Shan montane steppe and meadows	280766	7	9
Tibesti-Jebel Uweināt montane xeric woodlands	82422	0	0
Tibetan Plateau alpine shrublands and meadows	272732	57	62
Tigris-Euphrates alluvial salt marsh	35681	5	12
Timor and Wetar deciduous forests	33595	8	9
Tirari-Sturt stony desert	309080	9	10
Tocantins/Pindare moist forests	194056	19	19
Tongan tropical moist forests	943	12	12
Tonle Sap freshwater swamp forests	26086	12	12
Tonle Sap-Mekong peat swamp forests	29446	1	2
Torngat Mountain tundra	32667	39	41
Trans Fly savanna and grasslands	26789	39	39
Transantarctic Mountains tundra	19221	0	0
Trans-Baikal Bald Mountain tundra	218080	8	8
Trans-Baikal conifer forests	200904	10	18
Trans-Mexican Volcanic Belt pine-oak forests	92503	16	18
Trindade-Martin Vaz Islands tropical forests	9	0	0
Trinidad and Tobago dry forest	272	17	17
Trinidad and Tobago moist forest	4752	29	29
Tristan Da Cunha-Gough Islands shrub and grasslands	168	16	16

Trobriand Islands rain forests	4206	6	6
Tuamotu tropical moist forests	948	3	3
Tubuai tropical moist forests	142	0	0
Tumbes-Piura dry forests	41372	5	7
Tyrrhenian-Adriatic sclerophyllous and mixed forests	85191	18	21
Uatuma-Trombetas moist forests	473213	0	0
Ucayali moist forests	115186	21	21
Upper Gangetic Plains moist deciduous forests	263683	1	1
Upper Midwest US forest-savanna transition	136430	3	3
Urals montane forest and taiga	174996	20	20
Uruguayan savanna	353573	5	5
Ussuri broadleaf and mixed forests	197908	9	9
Valdivian temperate forests	248651	32	32
Vanuatu rain forests	13231	4	4
Venezuelan Andes montane forests	29457	58	58
Veracruz dry forests	6651	5	5
Veracruz moist forests	69281	5	8
Veracruz montane forests	4968	6	6
Victoria Basin forest-savanna	167040	11	11
Victoria Plains tropical savanna	225227	5	7
Vogelkop montane rain forests	21998	56	56
Vogelkop-Aru lowland rain forests	77576	9	9
Wasatch and Uinta montane forests	45750	9	9
Watson Highlands taiga	238237	4	5
West Sahara desert	746351	0	0
West Saharan montane xeric woodlands	258650	41	42
West Siberian taiga	1674261	9	9
West Sudanian savanna	1643027	15	15
Western Australian Mulga shrublands	463821	1	5
Western Congolian forest-savanna	376390	5	9
Western Congolian swamp forests	128922	52	52
Western Ecuador moist forests	34183	4	5
Western European broadleaf forests	493458	30	31
Western Great Lakes forests	289952	15	16
Western Guinean lowland forests	205560	12	12
Western Gulf coastal grasslands	91074	16	16
Western Himalayan alpine shrub and meadows	70320	23	23
Western Himalayan broadleaf forests	55986	7	7
Western Himalayan subalpine conifer forests	39764	9	9
Western Java montane rain forests	26342	9	9
Western Java rain forests	41752	2	2
Western Polynesian tropical moist forests	93	35	35
Western shortgrass prairie	488077	1	1

Western Siberian hemiboreal forests	223928	7	7
Westland temperate forests	5288	81	81
Willamette Valley oak savanna	14885	1	1
Windward Islands moist forests	2026	39	53
Wrangel Island Arctic desert	7548	95	95
Wyoming Basin shrub steppe	132764	4	4
Xingu-Tocantins-Araguaia moist forests	266821	33	33
Yamal-Gydan tundra	413060	7	7
Yap tropical dry forests	102	0	0
Yapen rain forests	2423	48	48
Yarlung Zangbo arid steppe	59591	23	23
Yellow Sea saline meadow	5334	43	43
Yucatan dry forests	49876	0	0
Yucatan moist forests	69849	0	0
Yunnan Plateau subtropical evergreen forests	240874	5	5
Zagros Mountains forest steppe	398650	5	5
Zambeian Baikiaea woodlands	360537	29	29
Zambeian coastal flooded savanna	19473	70	70
Zambeian evergreen dry forests	31767	20	20
Zambeian flooded grasslands	203152	49	50
Zambeian mopane woodlands	389628	41	41
Zambeian-Limpopo mixed woodlands	183422	20	20

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Table S3 Growth in coverage of terrestrial ecoregions as the global protected area estate expanded between 2010 and 2019.

Biome	Area added	
	Square kilometres	Per cent of total
Boreal Forests/Taiga	110464.7	6.8
Deserts & Xeric Shrublands	559906.9	34.5
Flooded Grasslands & Savannas	6170.0	0.4
Mangroves	9907.7	0.6
Mediterranean Forests, Woodlands & Scrub	115928.1	7.1
Montane Grasslands & Shrublands	102704.3	6.3
Temperate Broadleaf & Mixed Forests	109028.3	6.7
Temperate Conifer Forests	25101.8	1.5
Temperate Grasslands, Savannas & Shrublands	54553.4	3.4
Tropical & Subtropical Coniferous Forests	7347.8	0.5
Tropical & Subtropical Dry Broadleaf Forests	10752.0	0.7
Tropical & Subtropical Grasslands, Savannas & Shrublands	349509.1	21.5
Tropical & Subtropical Moist Broadleaf Forests	136878.9	8.4
Tundra	26521.1	1.6

- 85 1 Convention on Biological Diversity. COP 10 Decision X/2: Strategic Plan for Biodiversity
86 2011–2020, available at: <http://www.cbd.int/decision/cop/?id=12268>. (2011).
- 87 2 UNEP-WCMC & IUCN. World Database on Protected Areas (WDPA) [On-line]. (UNEP-WCMC,
88 Cambridge, UK 2019).
- 89 3 Jones, K. R. *et al.* One-third of global protected land is under intense human pressure.
90 *Science* **360**, 788-791 (2018).
- 91 4 Lewis, E. *et al.* Dynamics in the global protected-area estate since 2004. *Conservation*
92 *Biology* **33**, 570-579 (2019).
- 93 5 Butchart, S. H. M. *et al.* Shortfalls and Solutions for Meeting National and Global
94 Conservation Area Targets. *Conservation Letters* **8**, 329-337, doi:10.1111/conl.12158 (2015).
- 95 6 Global Administrative Areas. GADM database of Global Administrative Areas, version 2.0.
96 Available at <www.gadm.org> Downloaded 10/2/2019. (2012).
- 97 7 IUCN. A Global Standard for the Identification of Key Biodiversity Areas, Version 1.0., (Gland,
98 Switzerland, 2016).
- 99 8 Allan, J. R., Venter, O. & Watson, J. E. Temporally inter-comparable maps of terrestrial
100 wilderness and the Last of the Wild. *Scientific Data* **4**, 170187 (2017).
- 101 9 Jones, K. R. *et al.* The location and protection status of Earth's diminishing marine
102 wilderness. *Current Biology* **28**, 2506-2512. e2503 (2018).
- 103 10 BirdLife International. World Database of Key Biodiversity Areas., (Developed by the KBA
104 Partnership: BirdLife International, International Union for the Conservation of Nature,
105 Amphibian Survival Alliance, Conservation International, Critical Ecosystem Partnership
106 Fund, Global Environment Facility, Global Wildlife Conservation, NatureServe, Rainforest
107 Trust, Royal Society for the Protection of Birds, Wildlife Conservation Society and World
108 Wildlife Fund. Available at www.keybiodiversityareas.org. [Accessed 20/06/2019]. (2019).
- 109 11 Venter, O. *et al.* Sixteen years of change in the global terrestrial human footprint and
110 implications for biodiversity conservation. *Nature Communications* **7**, e12558,
111 doi:10.1038/ncomms12558 (2016).
- 112 12 Halpern, B. S. *et al.* Spatial and temporal changes in cumulative human impacts on the
113 world's ocean. *Nature Communications* **6**, 7615, doi:10.1038/ncomms8615 (2015).
- 114 13 Soto-Navarro, C. *et al.* New approaches to mapping carbon storage and biodiversity to
115 inform conservation and policy. . *Manuscript submitted for publication*. (2019).
- 116 14 Santoro, M. GlobBiomass - global datasets of forest biomass. (PANGAEA, 2018).
- 117 15 Bouvet, A. *et al.* An above-ground biomass map of African savannahs and woodlands at 25m
118 resolution derived from ALOS PALSAR. *Remote Sensing of Environment* **206**, 156-173,
119 doi:<https://doi.org/10.1016/j.rse.2017.12.030> (2018).
- 120 16 Xia, J. *et al.* Spatio-temporal patterns and climate variables controlling of biomass carbon
121 stock of global grassland ecosystems from 1982 to 2006. *Remote Sensing* **6**, 1783-1802
122 (2014).
- 123 17 Spawn, S. A., Lark, T. J. & Gibbs, H. K. A New Global Biomass Map for the Year 2010.,
124 (American Geophysical Union, New Orleans, LA., 2017).
- 125 18 Hengl, T. *et al.* SoilGrids250m: Global gridded soil information based on machine learning.
126 *PLoS one* **12**, e0169748 (2017).
- 127 19 IUCN. The IUCN Red List of Threatened Species. Version 2019-2. Available at:
128 <http://www.iucnredlist.org>. Downloaded on 10 September 2019. (2019).
- 129 20 Rodrigues, A. S. L. *et al.* Global Gap Analysis: Priority Regions for Expanding the Global
130 Protected-Area Network. *BioScience* **54**, 1092-1100, doi:10.1641/0006-
131 3568(2004)054[1092:ggaprf]2.0.co;2 (2004).
- 132 21 Venter, O. *et al.* Targeting global protected area expansion for imperiled biodiversity. *Plos*
133 *Biology* **12**, e1001891, doi:10.1371/journal.pbio.1001891 (2014).

134 22 Watson, J. E. M. *et al.* The Capacity of Australia's Protected-Area System to Represent
135 Threatened Species. *Conservation Biology* **25**, 324-332, doi:10.1111/j.1523-
136 1739.2010.01587.x (2011).

137 23 Dinerstein, E. *et al.* An Ecoregion-Based Approach to Protecting Half the Terrestrial Realm.
138 *BioScience* **67**, 534-545, doi:10.1093/biosci/bix014 (2017).

139 24 Spalding, M. D. *et al.* Marine Ecoregions of the World: A Bioregionalization of Coastal and
140 Shelf Areas. *BioScience* **57**, 573-583, doi:10.1641/b570707 (2007).

141 25 Spalding, M. D., Agostini, V. N., Rice, J. & Grant, S. M. Pelagic provinces of the world: A
142 biogeographic classification of the world's surface pelagic waters. *Ocean & Coastal*
143 *Management* **60**, 19-30 (2012).

144 26 Tittensor, D. P. *et al.* A mid-term analysis of progress toward international biodiversity
145 targets. *Science* **346**, 241-244 (2014).

146 27 Woodley, S. *et al.* Meeting Aichi Target 11: what does success look like for protected area
147 systems. *Parks* **18**, 23-36 (2012).

148 28 Secretariat of the Convention on Biological Diversity. Global Biodiversity Outlook 4. 155
149 pages (Montréal, 2014).

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151