

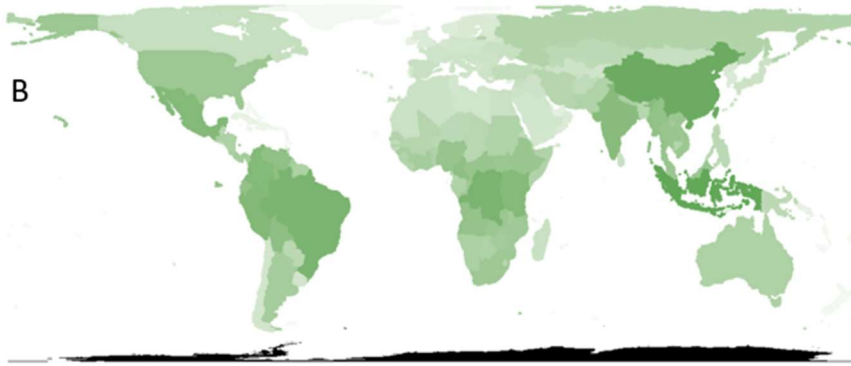
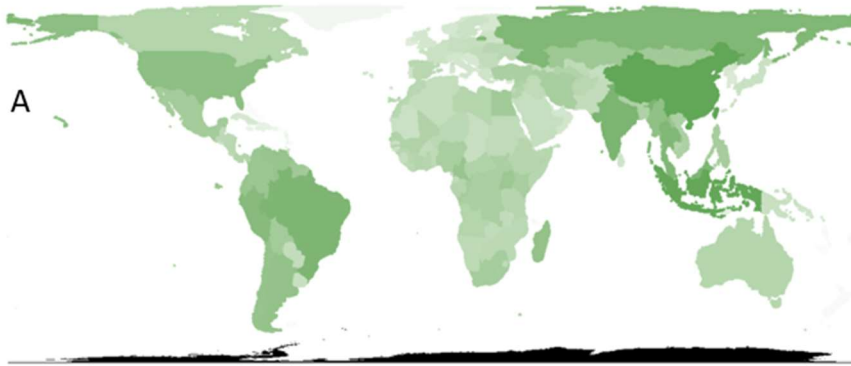
SUPPLEMENTARY INFORMATION:
The decline of mammal functional and evolutionary diversity worldwide

TABLE S1: Anthropogenic threat categories

Threat	Explanation
Habitat loss	This includes actual loss as well as habitat fragmentation and habitat degradation. Mechanisms are variable, but include deforestation, agricultural expansion, livestock grazing, mining, human-caused fires, roads (and collisions with vehicles), loss of habitat connectivity, etc. In many cases the word ‘habitat’ was not used in the IUCN species account explicitly, but was inferred from context (e.g., “draining of wetlands”, “expansion of agriculture”, “selective logging”, “clear-cutting”).
Harvest	This category includes legal and illegal exploitation in the form of direct hunting, snaring, and netting (all for a variety of subsistence and/or market-based reasons), as well as indirect bycatch in snares or nets that were set out to catch other species.
Climate change	This was associated with phrases such as “warming” or “loss of sea ice” in the IUCN species accounts. Climate change was often listed as a speculative threat (e.g. “...climate change could be an additional threat...”), in which case it was not judged to be a major cause of population decline.
Human-wildlife conflict	This is where humans kill animals to protect crops, livestock, or themselves or to remove animals that are above some (usually implicit) societal threshold in tolerable abundance. Terms in the IUCN species accounts included “retaliatory killing”, “crop raiding”, “agricultural pest”, and “cull”. This also includes carcass poisoning (to kill scavenging carnivores) and pesticides to kill rodents. Note that non-target effects of pesticides (e.g. rodenticides that inadvertently kill carnivores) were classified as Pollution rather than Human-wildlife conflict.
Non-native species	This includes competition from or predation by invasive species, including free-ranging feral animals such as dogs. Note that competition from non-native livestock on pasture lands was classified as Habitat Loss.
Pollution	This includes chemical pollutants, poisoning by fertilizers, and mechanical pollutions such as entanglement with debris. Note that being caught in nets or snares that were targeting other species was counted as Harvest.
Hybridization	Some species are threatened by hybridizing with introduced or native species.
Prey depletion	Certain carnivores are threatened by loss of their prey. This category would also apply to specialized herbivores that were threatened by loss of their particular food plant(s).

Disease	Many species are subject to diseases, but in order for this to be considered a major threat to the species, the pathogen(s) had to be likely affecting the mammal's population trend.
Inbreeding	Some species are demographically threatened (i.e., leading to population decline) by inbreeding depression.

FIGURE S1: Species richness (A), functional diversity (B), and phylogenetic diversity (C) of extant mammals. Species richness was strongly correlated with functional ($R = 0.85$, $P < 0.001$) and phylogenetic ($R = 0.95$, $P < 0.001$) diversity, consistent with findings from previous studies (1) (but see 2).



*Standardized
richness metric*

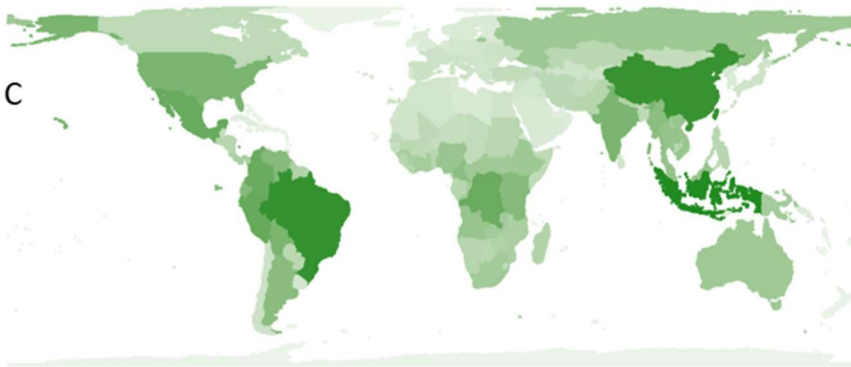
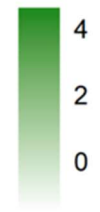


FIGURE S2: Impacts of human-wildlife conflict on absolute declines of mammal functional (A) and phylogenetic (B; units are millions of years of cumulative evolutionary history) diversity, and proportional declines in functional (C) and phylogenetic (D) diversity. Maps of where declines in species richness associated with human-wildlife conflict are significantly biased toward functionally (E) or phylogenetically (F) unique species (red), redundant species (blue), or are unbiased with respect to ecological function or phylogeny (white).

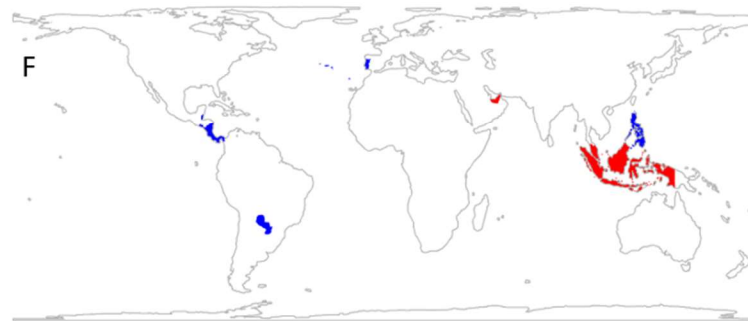
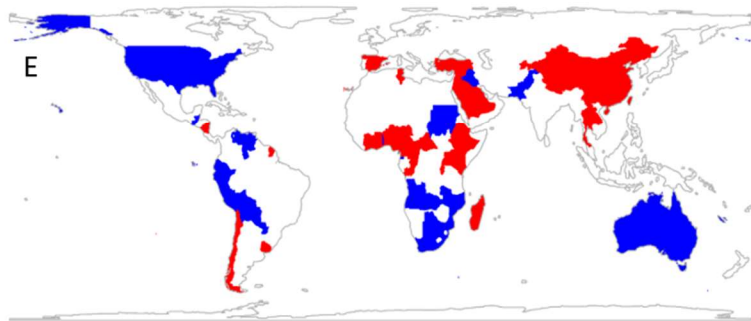
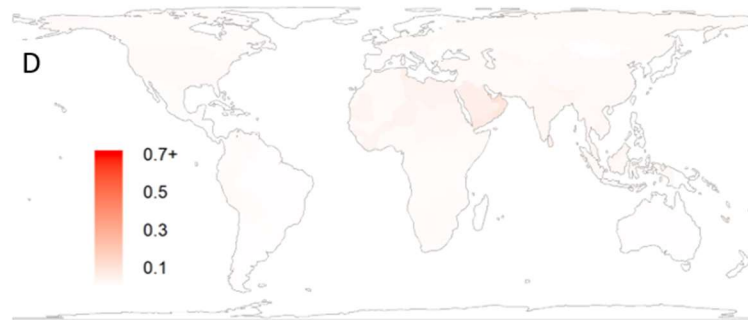
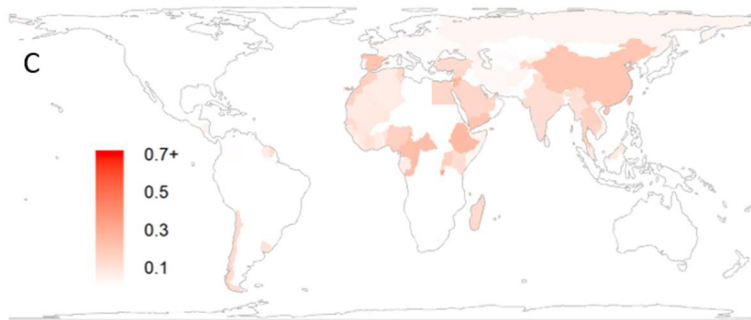
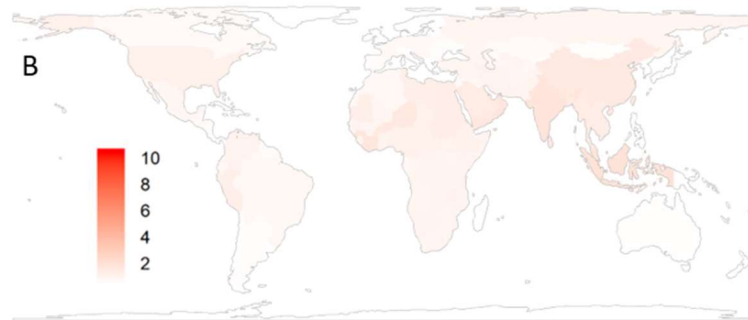
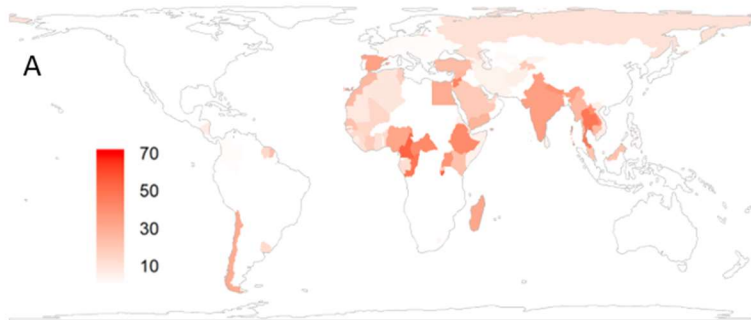
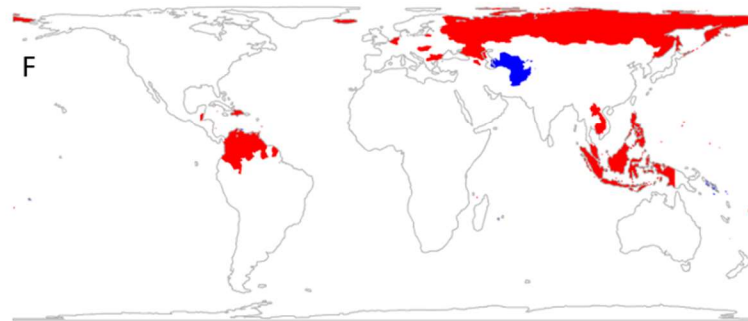
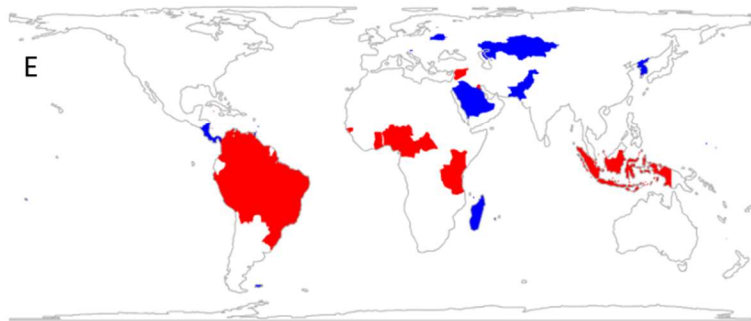
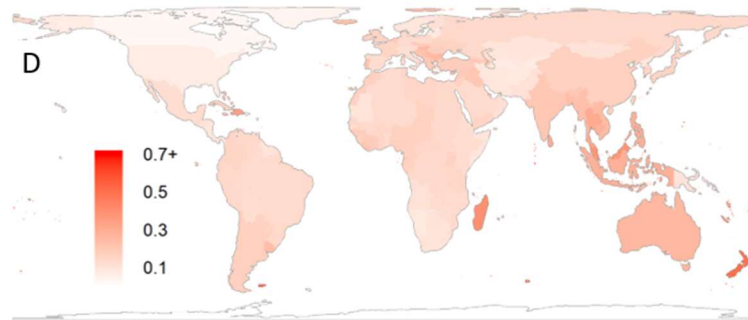
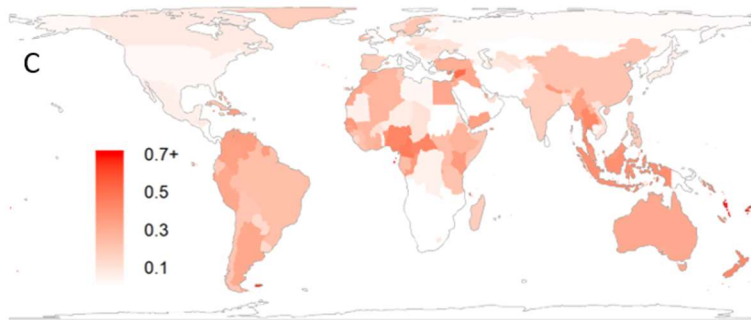
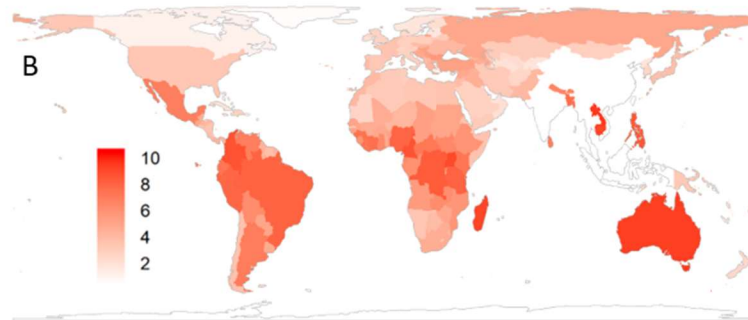
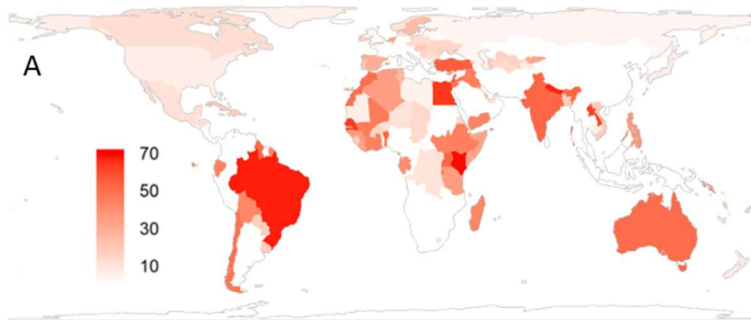


FIGURE S3: Impacts of all anthropogenic threats combined on absolute declines of mammal functional (A; units are cumulative dendrogram branch-lengths) and phylogenetic (B; units are millions of years of cumulative evolutionary history) diversity, and proportional declines in functional (C) and phylogenetic (D) diversity. Maps of where declines in species richness associated with all anthropogenic threats combined are significantly biased toward functionally (E) or phylogenetically (F) unique species (red), redundant species (blue), or are unbiased with respect to ecological function or phylogeny (white).



SUPPLEMENTAL LITERATURE CITED

1. Safi K, *et al.* (2011) Understanding global patterns of mammalian functional and phylogenetic diversity. *Philosophical Transactions of the Royal Society B-Biological Sciences* 366(1577):2536-2544.
2. Fritz SA & Purvis A (2010) Phylogenetic diversity does not capture body size variation at risk in the world's mammals. *Proceedings of the Royal Society B-Biological Sciences* 277(1693):2435-2441.