

## Supporting Information

**Table S1.** Sources of the historic range maps used in our analysis. Elevation limits (lower and upper) are in meters. Modifications to the source maps are listed in the footnotes.

Scientific Name	Common Name	Map source	Lower	Upper
<i>Acinonyx jubatus</i>	Cheetah	Morrison et al. (2007)		4000
<i>Canis lupus</i>	Gray wolf	Morrison et al. (2007) <sup>1</sup>		2400
<i>Canis lupus dingo</i>	Dingo	Letnic et al. (2012)		
<i>Canis rufus</i>	Red wolf	Morrison et al. (2007)		2400
<i>Canis simensis</i>	Ethiopian wolf	Ray et al. (2005)		
<i>Crocuta crocuta</i>	Spotted hyena	Ray et al. (2005)		4100
<i>Cuon alpinus</i>	Dhole	IUCN canid action plan <sup>2</sup>		5300
<i>Helarctos malayanus</i>	Sun bear	Morrison et al. (2007)		2100
<i>Parahyaena brunnea</i>	Brown hyena	Ray et al. (2005)		1500 <sup>3</sup>
<i>Hyaena hyaena</i>	Striped hyena	Morrison et al. (2007)		3300
<i>Lycaon pictus</i>	African wild dog	Ray et al. (2005)		4000
<i>Lynx lynx</i>	Eurasian lynx	IUCN felid action plan <sup>4</sup>		5500
<i>Melursus ursinus</i>	Sloth bear	Morrison et al. (2007)		2000
<i>Neofelis diardi</i>	Sunda clouded leopard	<a href="https://commons.wikimedia.org/wiki/File:Clouded_leopard_prevalence.png">https://commons.wikimedia.org/wiki/File:Clouded_leopard_prevalence.png</a>		1500
<i>Neofelis nebulosa</i>	Clouded leopard	<a href="https://commons.wikimedia.org/wiki/File:Clouded_leopard_historic_prevalence.png">https://commons.wikimedia.org/wiki/File:Clouded_leopard_historic_prevalence.png</a>		3000
<i>Panthera leo</i>	Lion	Morrison et al. (2007)		4200
<i>Panthera onca</i>	Jaguar	Panthera		3000
<i>Panthera pardus</i>	Leopard	Morrison et al. (2007)		5200
<i>Panthera tigris</i>	Tiger	Panthera		4500
<i>Panthera uncia</i>	Snow leopard	Morrison et al. (2007)	750	5800
<i>Puma concolor</i>	Puma	Panthera		5800
<i>Tremarctos ornatus</i>	Andean black bear	Morrison et al. (2007)	250	4750
<i>Ursus americanus</i>	American black bear	Morrison et al. (2007) <sup>5</sup>		3500
<i>Ursus arctos</i>	Brown bear	Morrison et al. (2007)		5000
<i>Ursus thibetanus</i>	Asiatic black bear	Morrison et al. (2007)		4300

<sup>1</sup> Added Japan, Sakhalin island (above Japan), and the corner of northeastern Russia

<sup>2</sup> Extended a bit northward on the basis of the current IUCN Red List fact sheet and input from Jan Kamler

<sup>3</sup> Elevation limit from the Animal Diversity Web:

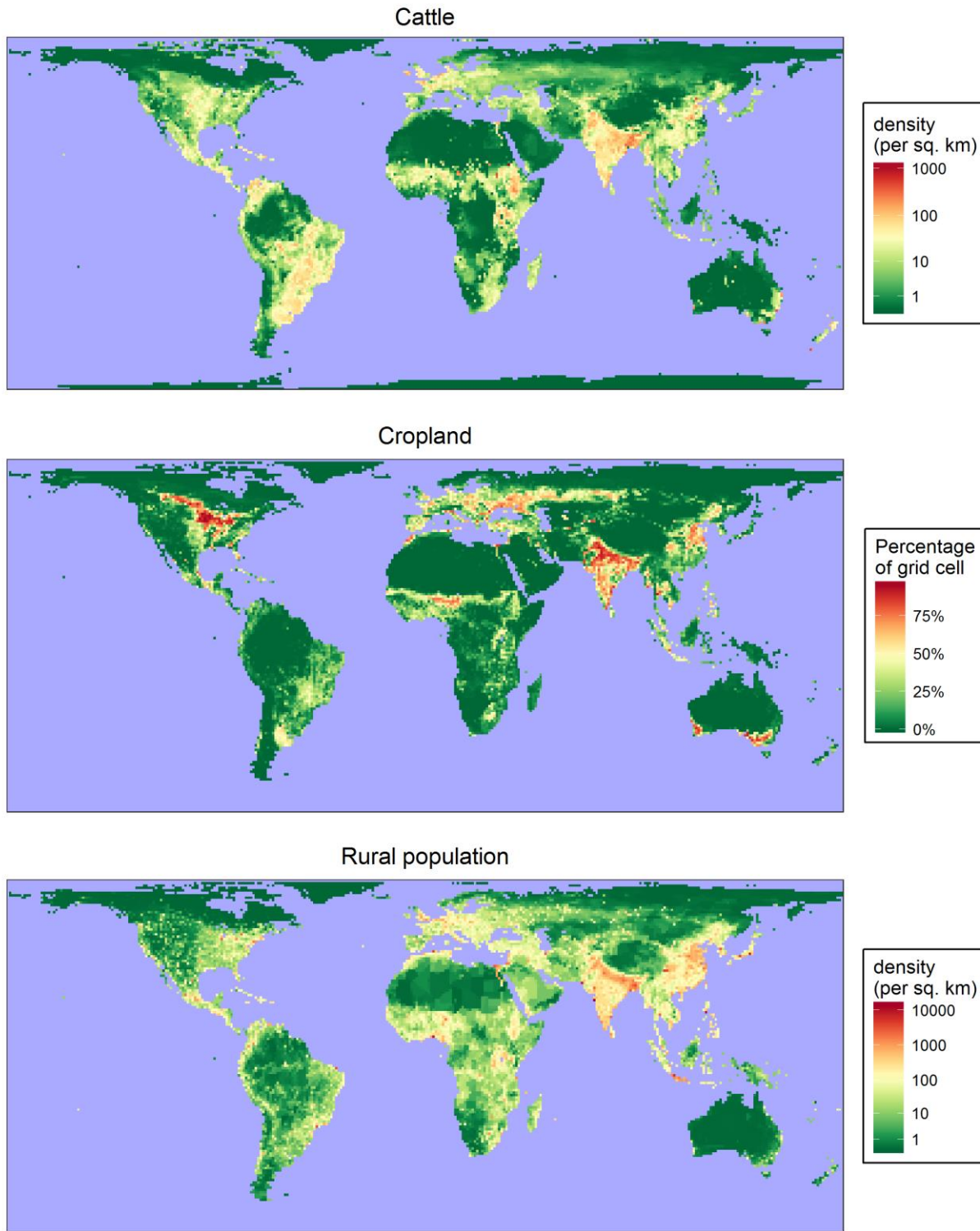
Myers P, Espinosa R, Parr CS, Jones T, Hammond GS, Dewey TA. The Animal Diversity Web (online) [Internet]. 2015 [cited 2014 Feb 27]. Available from: <http://animaldiversity.ummz.umich.edu>

<sup>4</sup> Only for Europe (treated historic range in Asia as matching the current range, reviewed by Bodil Elmhagen)

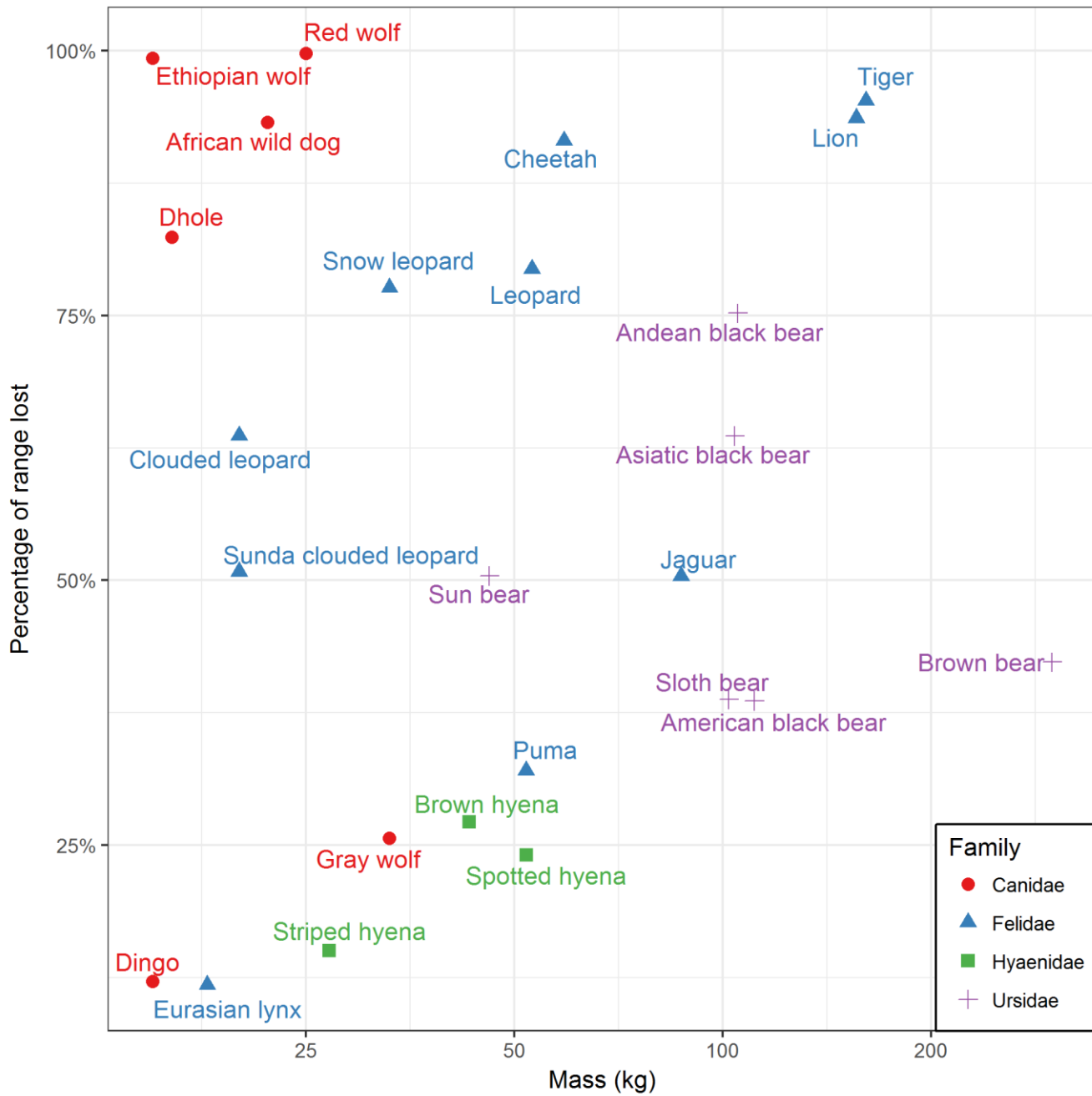
<sup>5</sup> Clipped northern portion of historic range to match with current range

**Table S2.** Summary data for large carnivore range contractions. Historic, current, and lost range areas are in square kilometers. “% Lost” is the estimated percentage range contraction.

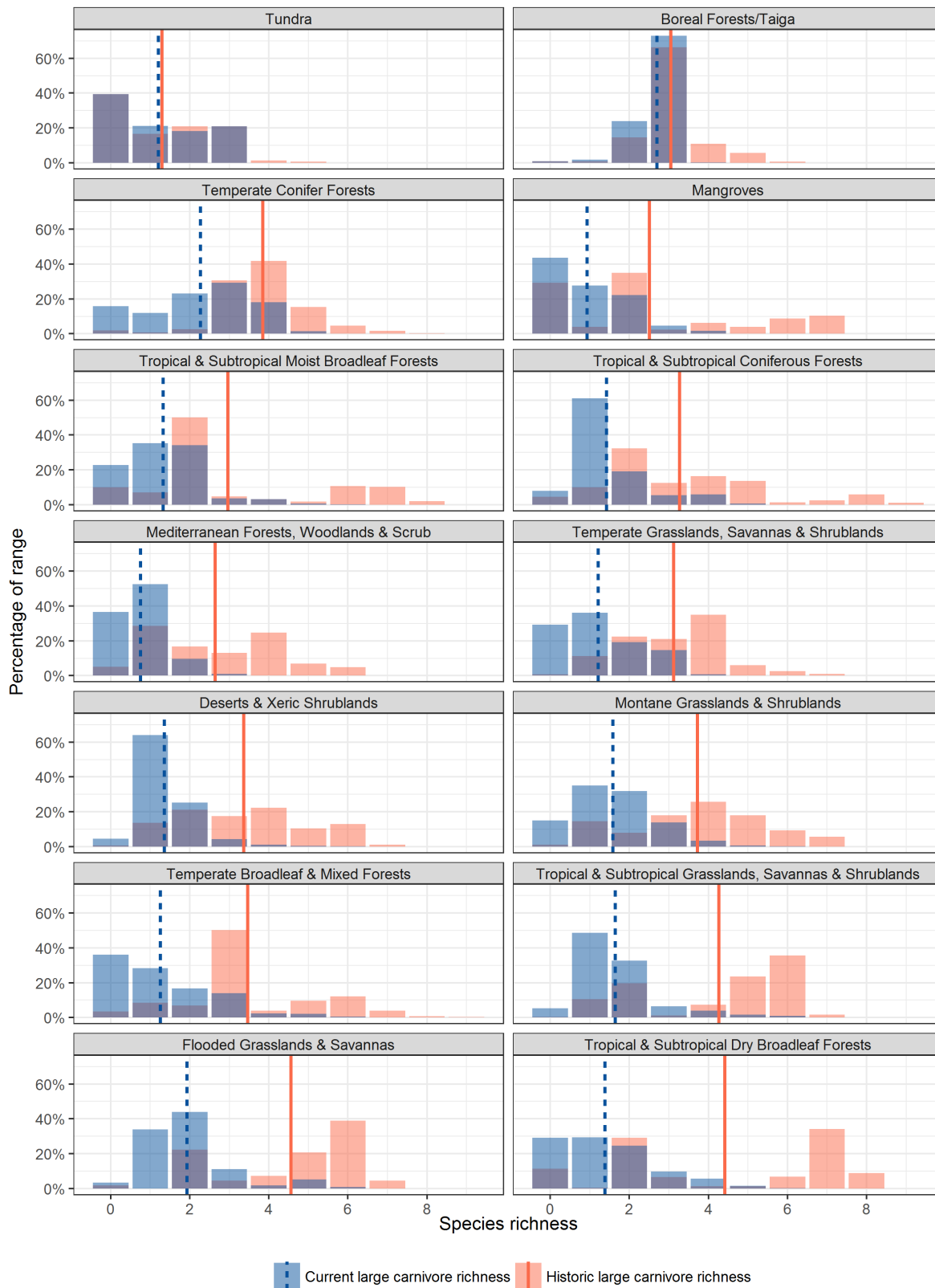
<b>Scientific Name</b>	<b>Common Name</b>	<b>Historic</b>	<b>Current</b>	<b>Lost</b>	<b>% Lost</b>
<i>Canis rufus</i>	Red wolf	2,205,755	5,771	2,199,984	99.7%
<i>Canis simensis</i>	Ethiopian wolf	888,157	6,187	881,969	99.3%
<i>Panthera tigris</i>	Tiger	16,622,223	780,646	15,841,576	95.3%
<i>Panthera leo</i>	Lion	26,914,341	1,703,935	25,210,406	93.7%
<i>Lycaon pictus</i>	African wild dog	18,924,058	1,278,603	17,645,455	93.2%
<i>Acinonyx jubatus</i>	Cheetah	34,997,842	2,964,276	32,033,567	91.5%
<i>Cuon alpinus</i>	Dhole	19,321,239	3,396,114	15,925,125	82.4%
<i>Panthera pardus</i>	Leopard	41,990,824	8,647,609	33,343,215	79.4%
<i>Panthera uncia</i>	Snow leopard	5,440,630	1,216,226	4,224,404	77.6%
<i>Tremarctos ornatus</i>	Andean black bear	1,190,733	294,980	895,753	75.2%
<i>Neofelis nebulosa</i>	Clouded leopard	4,950,609	1,798,205	3,152,404	63.7%
<i>Ursus thibetanus</i>	Asiatic black bear	8,645,920	3,142,301	5,503,619	63.7%
<i>Neofelis diardi</i>	Sunda clouded leopard	1,184,443	582,239	602,204	50.8%
<i>Helarctos malayanus</i>	Sun bear	3,285,879	1,628,906	1,656,973	50.4%
<i>Panthera onca</i>	Jaguar	17,774,713	8,818,148	8,956,565	50.4%
<i>Ursus arctos</i>	Brown bear	46,588,688	26,891,864	19,696,824	42.3%
<i>Melursus ursinus</i>	Sloth bear	2,481,079	1,518,776	962,304	38.8%
<i>Ursus americanus</i>	American black bear	15,829,679	9,714,012	6,115,666	38.6%
<i>Puma concolor</i>	Puma	31,259,847	21,240,084	10,019,763	32.1%
<i>Parahyaena brunnea</i>	Brown hyena	2,876,377	2,093,842	782,535	27.2%
<i>Canis lupus</i>	Gray wolf	64,169,543	47,702,213	16,467,330	25.7%
<i>Crocuta crocuta</i>	Spotted hyena	19,146,204	14,541,846	4,604,359	24.0%
<i>Hyaena hyaena</i>	Striped hyena	27,675,695	23,510,432	4,165,263	15.1%
<i>Canis lupus dingo</i>	Dingo	7,641,425	6,713,643	927,781	12.1%
<i>Lynx lynx</i>	Eurasian lynx	23,163,633	20,424,410	2,739,223	11.8%



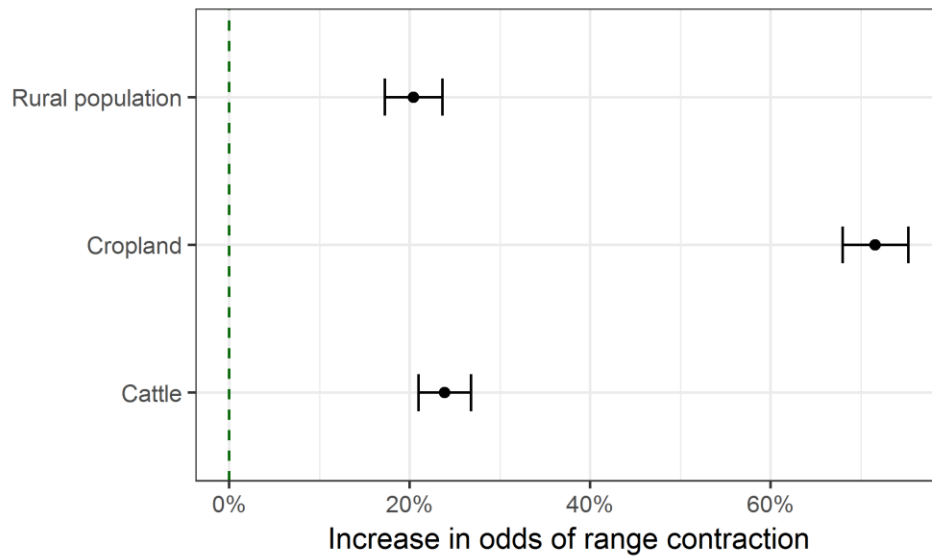
**Figure S1.** Predictor variables used in the model for predicting range contractions. For the rural population and cattle density variables, the values were log transformed (after adding 1). All variables were then scaled to have average 0 and standard deviation 1 so that their effects on the likelihood of range contraction can be compared on the same scale.



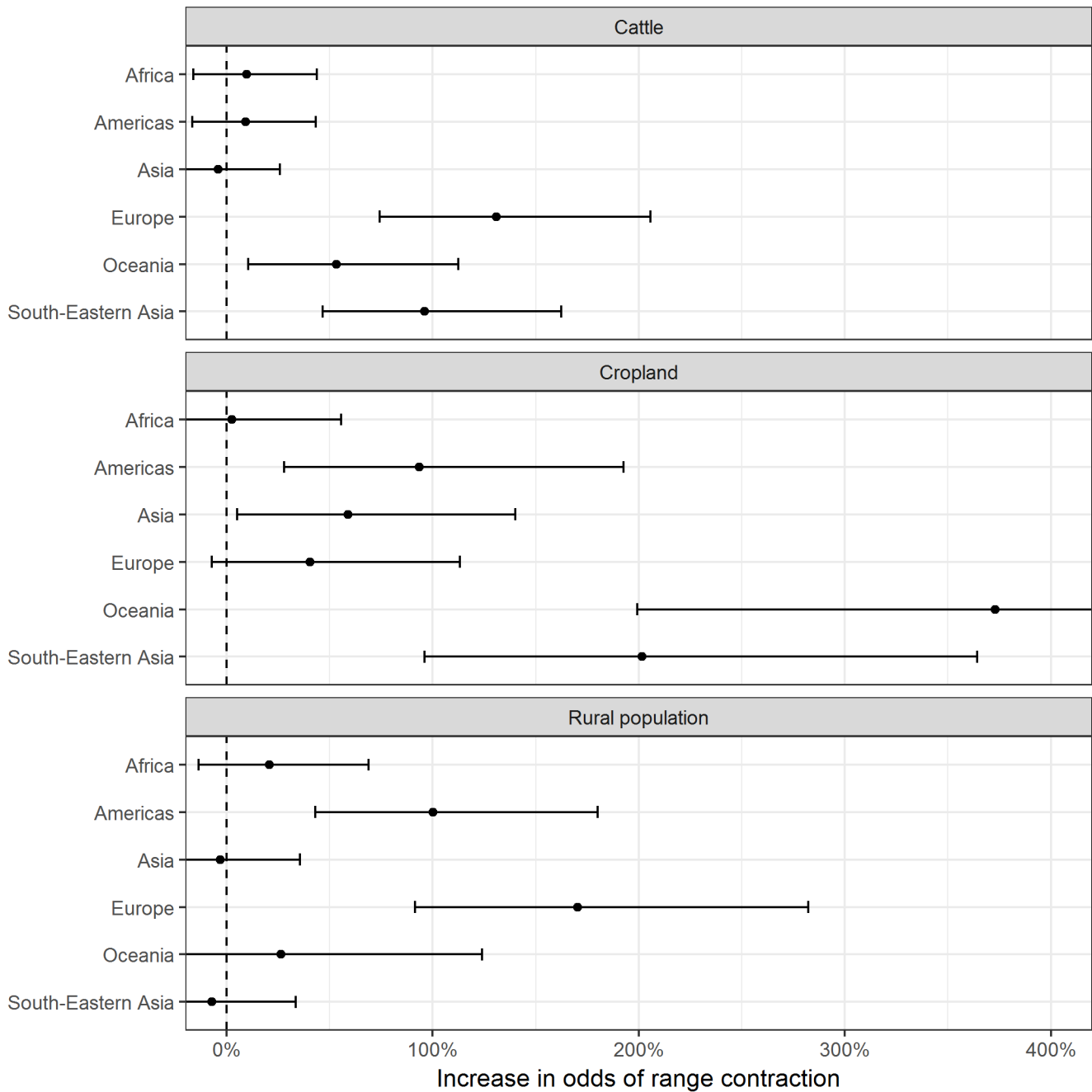
**Figure S2.** Percentage range contraction versus carnivore body mass. Overall, percentage range contraction does not appear to be closely linked to either carnivore species mass or taxonomic family.



**Figure S3.** Current and historic species richness histograms by biome. Vertical lines indicate mean richness. Panels are sorted by difference in mean richness and indicate that the most extensive range contractions occurred in “Flooded Grasslands & Savannas” and in “Topical & Subtropical Dry Broadleaf Forests.” Overlap between current and historic range histogram bars is shown in dark purple.



**Figure S4.** Results for a generalized linear mixed model predicting the increase in the odds of range contraction per one standard deviation increase in each predictor variable while accounting for the other variables (estimates shown with 95% confidence intervals). The p-values for all coefficients were significant ( $< 0.0001$ ). To account for potential dependence the model includes random intercepts by species along with a spatial autocovariate constructed using the residuals of the corresponding non-spatial model.



**Figure S5.** Effects of cattle density, cropland, and rural population on the odds of species range contraction by region of the world based on a spatially explicit generalized linear mixed model with random slopes (and intercepts) by geographic region and random intercepts by species. The panels show the estimated increases in the odds of range contraction per one standard deviation increase in each predictor variable (with 95% prediction intervals). All predictor variables were included together in the model. These results show substantial variation by geographic region in terms of the estimated effect sizes.