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Species' traits influenced their response to recent climate change

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2 **Supplementary methods**

3 **Data collection of intrinsic traits**

4 We selected eleven traits appropriate for mammals and/or birds according to published
5 literature (e.g.,³⁴⁻³⁷, see Supplementary Table 1 for the main sources of data): 1) Body mass
6 (grams), which refers to the mean mass of adult individuals; 2) Dietary breadth, the number of
7 categories of food items eaten by a species. In order to identify the species with the highest dietary
8 specialization, the categories of food items were defined as fruit, flowers/nectar/pollen,
9 wood/bark/stems, leaves, seeds/grains/nuts, roots/tubers, sap or other plant fluids, bryophytes,
10 fungi, mammals, birds, reptiles, amphibians, fishes, molluscs, aquatic crustaceans, insects,
11 terrestrial non-insect arthropods, terrestrial worms; 3) Dispersal distance (km), the maximum
12 distance covered by young individuals when they move from their birth site to the breeding site (or
13 the distance between fledging and breeding as an adult, for birds), calculated by using allometric
14 relationships with body mass and diet type for mammals, following ref.³⁸, and used as a categorical
15 variable for birds (Low, Medium and High dispersal ability); 4) Generation length (days), which
16 refers to the average age of parents of the current cohort, defined following ref.³⁹; 5) Litter
17 size/Clutch size, considered as the mean number of offspring born per litter per mammal female, or
18 eggs laid per clutch per bird female; 6) Litters per year, the mean number of litters per female per
19 year (available only for mammals); 7) Habitat specificity, which refers to the number of habitats in
20 which a species has been recorded (raw data downloaded from ref.⁴⁰ and www.iucn.org); 8)
21 Weaning age (days), considered as the age at which the offspring no longer receives milk from the
22 mother and independent foraging begins to make a major contribution to its energy requirements
23 (available only for mammals); 9) Activity patterns, daily activity cycle of a species. Categories were
24 obligate diurnal, obligate nocturnal, and bimodal; 10) Forest dependence, defined on the degree to
25 which species are restricted to and reliant upon forest habitat (available only for birds). Categories

26 were high, medium, and low, defined following ref.⁴¹, 11) Fossoriality (YES or NO, referred to
27 mammal species adapted/non-adapted to digging and life underground).

28 For intrinsic characteristics, we obtained the mean and standard deviation of the value for all
29 numerical traits (e.g., body mass or litter size), and modal value of categorical traits (e.g., whether a
30 species is diurnal, nocturnal etc), from published sources. For species that lacked data for one or
31 more intrinsic traits, we first calculated the average body mass of congeneric or confamilial species,
32 following ref.³⁹, and assigned the corresponding mean value for each trait considered. For species
33 lacking a congeneric or confamilial species in the same bin of log body mass, we assigned the mean
34 value of the trait of congenics or confamilials, irrespective of their body mass. When no data was
35 available for congeneric or confamilial species, we assigned the mean value of the trait of species in
36 the same bin of log body mass, belonging to the same order.

37

38 **Data collection of spatial traits and magnitude of climate change**

39 We selected seven characteristics of the range in which a species is distributed (see
40 Supplementary Table 1 for the main sources of data): 1) Maximum temperature in the distributional
41 range (°C); 2) Temperature seasonality (°C), calculated as the difference between the maximum and
42 the minimum temperatures that a species experiences within its distributional range, by accounting
43 for the absence of birds from breeding ranges in the winter; 3) Precipitation seasonality (mm),
44 which represents the difference in mean precipitation between the wettest and the driest quarters
45 within a species distributional range; 4) Minimum altitude (meters), which is the minimum altitude
46 at which a species currently lives; 5) Altitudinal range (meters), calculated as the difference
47 between the maximum and the minimum altitudes at which a species currently lives; 6) Mean
48 difference between the current (mean 1980-2009) and the past (mean 1920-1949) temperature
49 within a species range.

50 Given the fact that our data are mostly at the population level, while our models are at the
51 species level, for the last variable, i.e. the mean difference between the present and the past
52 temperature, we also computed standard errors to account for the variability in the rate of climatic
53 change experienced by a species within its geographic range. This was particularly useful to make
54 more reliable predictions for species having large range siezes. We did not consider standard errors
55 for the other extrinsic variables because they reflect the environmental tolerances of a species,
56 therefore it is important to use values calculated across the entire geographic range.

57 All these variables were calculated with a Geographic Information System (GRASS GIS,
58 GRASS Development Team, 2010) by using geographic range maps for mammals from IUCN
59 (2014, available at www.iucn.org) and for birds from BirdLife International and NatureServe (2014,
60 available at www.birdlife.org/datazone/info/spcdownload), and climatic data from the WorldClim
61 database (<http://www.worldclim.org>) rescaled at 5 arc-minutes resolution (~9 km at the equator).

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63 **Keywords used to select the papers for the literature review**

64 Literature reviews can be sometimes subject to publication bias, although a work by
65 Maclean and Wilson (2011)⁴² suggested that there is little evidence of this bias in climate change
66 studies of extinction risk. In order to try to reduce this bias, by using ISI Web of Knowledge, several
67 keywords were combined to identify studies on climate change (climate change*, global warming*,
68 sea-level rise*, elevated CO2*, drought*, cyclones*, CO2 concentration*, extreme temperatures*,
69 el Niño events*, la Niña events*, severe wheather*, NAO changes*, sea ice extent*) impacts/no
70 impacts (population reduction*, population decline*, increase in population size*, range changes*,
71 range shift*, range reductions*, turnover*, extinction risk*, extinction probability*, survival*,
72 mortality*, fertility*, changes in phenology*, advances in hibernation*, adaptation*, no change*,
73 unchanged*, no effects*) on species/populations (mammals*, *carnivores*, herbivores*,

74 ungulates*, primates*, rodents*, marsupials*, birds*, birds of prey*, penguins*, passeriformes*,
75 non-flying*).

76

77 **Hypotheses on the relationships between the selected predictors and the response of species to** 78 **climate change**

79 We used multinomial logistic regression models to test a series of hypotheses concerning the
80 relationships between the response of species to recent climate change and the intrinsic and
81 extrinsic variables described in the sections above.

82 1) We expect that small body mass, nocturnality and fossorial behaviour help species
83 survive extreme climatic events. These species may be favoured by the fact that they can
84 more easily find shelter from excessive heat³⁵;

85 2) Species having less specialized dietary or habitat requirements are likely to be less
86 sensitive due to a greater adaptability to new environmental conditions^{43,44};

87 3) Species having high dispersal rates are likely to be advantaged to shift spatially when
88 facing changes in local climate^{45,46};

89 4) Species with long generation length and long weaning age should respond more
90 slowly to new selective pressures⁴⁷, and may thus have higher risk of extinction than species
91 with a short generation time⁴⁸;

92 5) Frequent reproduction and high fecundity should increase colonization opportunity
93 by increasing the net reproductive rate, and species with these characteristics should be more
94 likely to expand into new regions under climate change⁴⁹;

95 6) We expect that species living in more structurally complex habitats such as forests
96 may have greater opportunity to exploit microclimates and therefore cope with extremes;

7) Species with lower thermal maxima (the temperature at the hottest part of the species' climate envelope) will be less tolerant to climate warming⁵⁰;

8) Species restricted to the highest elevations are already near their climatic and geographic limits, and it will be difficult for them to move upslope in the face of continuing temperature rise³⁵;

9) Since the physiology and ecology of many species are coupled to very specific ranges of environmental variables (i.e. temperature, altitude and precipitation), those with narrow tolerance ranges are particularly subject to climate change⁴⁴;

10) Species that experienced the greatest changes in temperature and precipitation have been more negatively affected by recent climate change.

We splitted our primary literature datasets and used 80% of the initial sample to fit the models. Then, to evaluate the predicting performance of our models, we assessed the accuracy of each model by computing the area under the curve (AUC) on the remaining 20% of the initial data. We repeated this procedure 100 times and reported the mean value of the AUC for mammals, and birds in both breeding and non-breeding areas (Supplementary Figures 7-8-9).

115 **Supplementary Table 1 | Selected potential correlates of extinction risk associated with**
 116 **climate change.**

Intrinsic characteristics	Main data sources	Extrinsic factors	Main data sources
Mammals			
Body mass	Refs. ⁵¹⁻⁵³	Altitudinal interval	http://www.usgs.gov/
Dietary breadth	Refs. ⁵⁴⁻⁵⁶	Minimum altitude	http://www.usgs.gov/
Dispersal distance	Ref. ³⁸	Precipitation seasonality	http://www.worldclim.org/
Generation length	Ref. ³⁹	Temperature seasonality	http://www.worldclim.org/
Litter size	Refs. ^{51,57}	Maximum temperature	http://www.worldclim.org/
Litters per year	Refs. ^{51,57}	Mean T difference	http://www.cru.uea.ac.uk/data
Weaning age	Refs. ^{51,57}		
Activity pattern	Ref. ⁵⁸		
Habitat specificity	www.iucn.org		
Fossoriality	Ref. ⁵⁶		
Birds			
Body mass	Ref. ⁵⁸	Altitudinal interval br/nb	http://www.usgs.gov/
Dietary breadth	Ref. ⁵⁸	Minimum altitude br/nb	http://www.usgs.gov/
		Precipitation seasonality br/nb	http://www.worldclim.org/
Dispersal distance	Ref. ⁴⁰	Temperature seasonality br/nb	http://www.worldclim.org/
Generation length	Ref. ⁴⁰	Maximum temperature br/nb	http://www.worldclim.org/
Mean clutch size	Ref. ⁵⁸	Mean T difference br/nb	
Forest dependence	Ref. ⁴¹		
Activity pattern	Ref. ⁵⁸		
Habitat specificity	Ref. ⁴⁰		

118 **Supplementary Table 2 | Negative observed impacts on species.** Number and percentage of
119 species for which a negative impact was observed.

Impacts	Mammals	Birds
Reduced range size	30 (25%)	160 (28.1%)
Decline in abundance	48 (40%)	462 (81.1%)
Reduced breeding success	4 (3.3%)	5 (0.8%)
Reduced fecundity	1(0.8%)	1 (0.2%)
Decline in population density	3 (2.5%)	0
Reduced fledging success	0	1 (0.2%)
Reduced hatching success	0	1 (0.2%)
Reduced nest survival	0	1 (0.2%)
Reduced recruitment	0	1 (0.2%)
Increased mortality rate	2 (1.7%)	0
Reduced survival rate	5 (4%)	11 (1.9%)
Reduced litter size	4 (3.3%)	0

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121 **Supplementary Table 3 | Coefficient estimates, standard errors and confidence intervals of the most**
122 **important predictors resulting from the best multinomial model in mammals. AUC=0.92. AIC=279.6.**

Coefficients	Estimates	Std. Err.	l-95% CI	u-95% CI
	best	best model		
	model			
Mixed:(Intercept)	-4.74E+02	4.41E-04	-4.74E+02	-4.74E+02
Mixed:FossorialYES	1.30E+02	5.02E-10	1.30E+02	1.30E+02
Mixed:OrderEULIPOTYPHLA	-2.90E+01	4.77E-13	-2.90E+01	-2.90E+01
Mixed:OrderRODENTIA	3.62E+01	4.41E-04	3.62E+01	3.62E+01
Mixed:mean_T_diff	2.17E+02	2.78E-04	2.17E+02	2.17E+02
Mixed:Diet	1.26E+01	4.74E-03	1.26E+01	1.26E+01
Positive:(Intercept)	-2.88E+00	1.31E+00	-4.19E+00	-1.58E+00
Positive:Prec_range	2.66E-03	1.24E-03	1.42E-03	3.90E-03
Positive:OrderDASYUROMORPHIA	-1.67E+02	3.16E-76	-1.67E+02	-1.67E+02
Positive:OrderDIDELPHIMORPHIA	1.93E+02	1.46E-87	1.93E+02	1.93E+02
Positive:OrderDIPROTODONTIA	-2.40E+02	3.16E-107	-2.40E+02	-2.40E+02
Positive:OrderLAGOMORPHA	-1.59E+02	8.28E-70	-1.59E+02	-1.59E+02
Positive:OrderPERISSODACTYLA	-2.21E+02	6.82E-96	-2.21E+02	-2.21E+02
Positive:OrderPRIMATES	-2.42E+02	2.44E-104	-2.42E+02	-2.42E+02
Positive:OrderPROBOSCIDEA	-3.62E+02	5.79E-156	-3.62E+02	-3.62E+02
Unchanged:(Intercept)	-2.14E+00	9.89E-01	-3.13E+00	-1.15E+00
Unchanged:Prec_range	2.70E-03	1.30E-03	1.39E-03	4.00E-03
Unchanged:FossorialYES	1.68E+00	9.41E-01	7.41E-01	2.62E+00
Unchanged:OrderDASYUROMORPHIA	-1.10E+02	3.64E-49	-1.10E+02	-1.10E+02
Unchanged:OrderDIDELPHIMORPHIA	-3.66E+01	1.04E-100	-3.66E+01	-3.66E+01
Unchanged:OrderDIPROTODONTIA	-1.11E+02	3.88E-49	-1.11E+02	-1.11E+02
Unchanged:OrderEULIPOTYPHLA	3.92E+00	9.83E-01	2.94E+00	4.91E+00
Unchanged:OrderPRIMATES	-2.12E+02	6.61E-92	-2.12E+02	-2.12E+02
Unchanged:OrderPROBOSCIDEA	-3.13E+02	7.26E-135	-3.13E+02	-3.13E+02
Unchanged:OrderRODENTIA	1.75E+00	5.98E-01	1.15E+00	2.35E+00
Unchanged:mean_T_diff	-2.78E+00	1.56E+00	-4.34E+00	-1.22E+00

123 **Supplementary Table 4 | Coefficient estimates, standard errors and confidence intervals of the most**
124 **important predictors resulting from the best multinomial model in birds (breeding range). AUC=0.81.**
125 **AIC=1281.56.**

Coefficients	Estimates best model	Std. Err. best model	l-95% CI	u-95% CI
Mixed:(Intercept)	-9.46E+00	3.73E-02	-9.49E+00	-9.42E+00
Mixed:mean_t_diff_br	2.92E+00	8.23E-01	2.10E+00	3.74E+00
Mixed:Alt_min_br	-1.09E-02	4.44E-03	-1.54E-02	-6.51E-03
Mixed:Mean_clutch_size	4.48E-01	8.64E-02	3.61E-01	5.34E-01
Mixed:Habitat_cat	1.40E-01	4.79E-02	9.26E-02	1.88E-01
Mixed:OrderANSERIFORMES	-1.51E+00	7.32E-01	-2.24E+00	-7.76E-01
Mixed:OrderBUCEROTIFORMES	-2.13E+01	2.06E-11	-2.13E+01	-2.13E+01
Mixed:OrderCAPRIMULGIFORMES	2.55E+00	9.37E-01	1.61E+00	3.48E+00
Mixed:OrderCICONIIFORMES	2.54E+01	6.92E-01	2.47E+01	2.61E+01
Mixed:OrderCOLUMBIFORMES	2.51E+01	6.56E-01	2.45E+01	2.58E+01
Mixed:OrderCORACIIFORMES	-2.18E+01	3.06E-10	-2.18E+01	-2.18E+01
Mixed:OrderCUCULIFORMES	2.79E+00	7.95E-01	2.00E+00	3.59E+00
Mixed:OrderGALLIFORMES	-2.32E+00	7.43E-01	-3.06E+00	-1.57E+00
Mixed:OrderGAVIIFORMES	-1.65E+01	2.57E-09	-1.65E+01	-1.65E+01
Mixed:OrderGRUIIFORMES	2.10E+01	6.68E-01	2.03E+01	2.16E+01
Mixed:OrderPASSERIFORMES	1.88E+00	3.64E-01	1.52E+00	2.24E+00
Mixed:OrderPELECANIFORMES	8.84E-01	4.76E-01	4.08E-01	1.36E+00
Mixed:OrderPODICIPEDIFORMES	2.40E+00	4.32E-01	1.97E+00	2.84E+00
Mixed:OrderPROCELLARIIFORMES	-1.46E+01	1.90E-08	-1.46E+01	-1.46E+01
Mixed:OrderSPHENISCIFORMES	-8.80E+00	1.14E-06	-8.80E+00	-8.80E+00
Mixed:OrderSTRIGIFORMES	-1.86E+01	4.27E-10	-1.86E+01	-1.86E+01
Mixed:OrderSULIFORMES	-2.49E+00	8.96E-12	-2.49E+00	-2.49E+00
Mixed:T_max_br	8.77E-02	3.27E-02	5.50E-02	1.20E-01
Mixed:T_range_br	3.30E-01	1.19E-01	2.10E-01	4.49E-01
Mixed:T_max_br:T_range_br	-9.48E-03	3.66E-03	-1.31E-02	-5.82E-03
Positive:mean_t_diff_br	-8.88E-01	4.59E-01	-1.35E+00	-4.29E-01
Positive:OrderBUCEROTIFORMES	-2.52E+01	3.76E-12	-2.52E+01	-2.52E+01
Positive:OrderCHARADRIIFORMES	-1.14E+00	3.62E-01	-1.50E+00	-7.76E-01
Positive:OrderCICONIIFORMES	2.23E+01	6.92E-01	2.16E+01	2.30E+01
Positive:OrderCOLUMBIFORMES	2.21E+01	5.52E-01	2.15E+01	2.26E+01
Positive:OrderFALCONIFORMES	-1.58E+00	9.07E-01	-2.49E+00	-6.72E-01
Positive:OrderGALLIFORMES	-2.18E+00	8.15E-01	-3.00E+00	-1.37E+00
Positive:OrderGAVIIFORMES	-1.60E+00	5.27E-01	-2.13E+00	-1.07E+00
Positive:OrderGRUIIFORMES	2.18E+01	5.54E-01	2.12E+01	2.23E+01
Positive:OrderPASSERIFORMES	-4.90E-01	2.69E-01	-7.59E-01	-2.20E-01
Positive:OrderPSITTACIFORMES	1.85E+01	3.63E-10	1.85E+01	1.85E+01
Positive:OrderSPHENISCIFORMES	-2.63E+01	5.71E-12	-2.63E+01	-2.63E+01
Positive:OrderSTRIGIFORMES	-1.46E+00	6.77E-01	-2.13E+00	-7.80E-01
Positive:OrderSULIFORMES	1.85E+01	6.88E-10	1.85E+01	1.85E+01
Positive:T_range_br	2.68E-01	7.63E-02	1.91E-01	3.44E-01
Positive:T_max_br:T_range_br	-7.36E-03	2.41E-03	-9.76E-03	-4.95E-03
Unchanged:(Intercept)	-9.47E+00	3.89E-02	-9.50E+00	-9.43E+00
Unchanged:mean_t_diff_br	-1.69E+00	6.69E-01	-2.36E+00	-1.02E+00
Unchanged:Alt_min_br	-4.39E-03	1.88E-03	-6.28E-03	-2.51E-03
Unchanged:OrderANSERIFORMES	1.32E+01	8.22E-01	1.24E+01	1.40E+01
Unchanged:OrderBUCEROTIFORMES	-5.87E+00	1.28E-10	-5.87E+00	-5.87E+00
Unchanged:OrderCAPRIMULGIFORMES	1.51E+01	7.50E-01	1.43E+01	1.58E+01
Unchanged:OrderCHARADRIIFORMES	1.30E+01	5.78E-01	1.24E+01	1.36E+01

Unchanged:OrderCICONIIFORMES	-8.56E-01	1.67E-18	-8.56E-01	-8.56E-01
Unchanged:OrderCOLUMBIFORMES	3.69E+01	7.27E-01	3.62E+01	3.76E+01
Unchanged:OrderCORACIIFORMES	-6.56E+00	5.91E-10	-6.56E+00	-6.56E+00
Unchanged:OrderCUCULIFORMES	-7.71E+00	2.52E-10	-7.71E+00	-7.71E+00
Unchanged:OrderFALCONIFORMES	-8.99E+00	7.41E-11	-8.99E+00	-8.99E+00
Unchanged:OrderGALLIFORMES	-1.26E+01	1.18E-11	-1.26E+01	-1.26E+01
Unchanged:OrderGAVIIFORMES	-7.32E+00	1.65E-10	-7.32E+00	-7.32E+00
Unchanged:OrderGRUIIFORMES	3.57E+01	7.57E-01	3.50E+01	3.65E+01
Unchanged:OrderPASSERIFORMES	1.41E+01	3.69E-01	1.37E+01	1.44E+01
Unchanged:OrderPELECANIFORMES	-6.87E+00	2.32E-10	-6.87E+00	-6.87E+00
Unchanged:OrderPICIFORMES	1.48E+01	6.88E-01	1.41E+01	1.54E+01
Unchanged:OrderPODICIPEDIFORMES	-5.55E+00	4.23E-10	-5.55E+00	-5.55E+00
Unchanged:OrderPROCELLARIIFORMES	-1.12E+01	3.90E-11	-1.12E+01	-1.12E+01
Unchanged:OrderPSITTACIFORMES	-4.88E-01	1.60E-16	-4.88E-01	-4.88E-01
Unchanged:OrderSPHENISCIFORMES	-2.05E+01	2.74E-15	-2.05E+01	-2.05E+01
Unchanged:OrderSTRIGIFORMES	1.43E+01	6.87E-01	1.37E+01	1.50E+01
Unchanged:OrderSULIFORMES	-5.04E-01	2.53E-16	-5.04E-01	-5.04E-01
Unchanged:T_max_br	-1.72E-01	3.05E-02	-2.02E-01	-1.41E-01

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128 **Supplementary Table 5 | Coefficient estimates, standard errors and confidence intervals of the most**
129 **important predictors resulting from the best multinomial model in birds (non breeding range).**
130 **AUC=0.79. AIC=1288.94.**

Coefficients	Estimates best model	Std. Err. best model	l-95% CI	u-95% CI
Mixed:(Intercept)	-5.28E+00	5.44E-02	-5.34E+00	-5.23E+00
Mixed:Gen_length	1.22E-01	6.50E-02	5.74E-02	1.87E-01
Mixed:Dispersal_distanceL	-2.28E-01	5.61E-02	-2.84E-01	-1.72E-01
Mixed:Habitat_cat	1.56E-01	4.31E-02	1.13E-01	1.99E-01
Mixed:Prec_range_nb	-3.11E-03	9.59E-04	-4.06E-03	-2.15E-03
Mixed:Mean_clutch_size	5.34E-01	6.80E-02	4.66E-01	6.02E-01
Mixed:OrderANSERIFORMES	-1.92E+00	2.64E-02	-1.94E+00	-1.89E+00
Mixed:OrderCAPRIMULGIFORMES	3.11E+00	1.97E-02	3.09E+00	3.13E+00
Mixed:OrderCHARADRIIFORMES	-6.05E-01	4.64E-02	-6.52E-01	-5.59E-01
Mixed:OrderCICONIIFORMES	5.13E+01	3.77E-03	5.13E+01	5.13E+01
Mixed:OrderCOLUMBIFORMES	7.73E+01	1.88E-02	7.72E+01	7.73E+01
Mixed:OrderCORACIIFORMES	-5.78E+01	1.92E-16	-5.78E+01	-5.78E+01
Mixed:OrderCUCULIFORMES	2.76E+00	7.11E-03	2.76E+00	2.77E+00
Mixed:OrderFALCONIFORMES	1.27E+00	9.28E-03	1.26E+00	1.27E+00
Mixed:OrderGALLIFORMES	-1.92E+00	1.47E-02	-1.93E+00	-1.90E+00
Mixed:OrderGRUIIFORMES	5.08E+01	1.76E-02	5.08E+01	5.08E+01
Mixed:OrderPASSERIFORMES	2.13E+00	1.86E-01	1.95E+00	2.32E+00
Mixed:OrderPELECANIFORMES	1.31E+00	8.26E-03	1.30E+00	1.32E+00
Mixed:OrderPODICIPEDIFORMES	2.71E+00	1.08E-02	2.70E+00	2.72E+00
Mixed:OrderPROCELLARIIFORMES	-4.58E+01	3.38E-24	-4.58E+01	-4.58E+01
Mixed:OrderSPHENISCIFORMES	-2.61E+01	1.95E-15	-2.61E+01	-2.61E+01
Mixed:OrderSULIFORMES	-7.16E+00	3.68E-30	-7.16E+00	-7.16E+00
Positive:(Intercept)	-1.28E+00	9.66E-02	-1.38E+00	-1.18E+00
Positive:mean_t_diff_nb	-9.72E-01	7.95E-02	-1.05E+00	-8.92E-01
Positive:Gen_length	1.63E-01	3.53E-02	1.28E-01	1.98E-01
Positive:Alt_range_nb	3.88E-04	1.54E-04	2.33E-04	5.42E-04
Positive:Alt_min_nb	-1.74E-03	7.51E-04	-2.49E-03	-9.89E-04
Positive:Dispersal_distanceL	-5.40E-01	2.10E-01	-7.50E-01	-3.30E-01
Positive:Prec_range_nb	1.17E-03	4.13E-04	7.56E-04	1.58E-03
Positive:OrderANSERIFORMES	-3.18E-01	6.12E-02	-3.79E-01	-2.57E-01
Positive:OrderBUCEROTIFORMES	-6.91E+01	7.29E-25	-6.91E+01	-6.91E+01
Positive:OrderCAPRIMULGIFORMES	3.65E-01	9.99E-02	2.65E-01	4.64E-01
Positive:OrderCHARADRIIFORMES	-7.68E-01	2.67E-01	-1.04E+00	-5.01E-01
Positive:OrderCICONIIFORMES	4.78E+01	3.77E-03	4.78E+01	4.78E+01
Positive:OrderCOLUMBIFORMES	7.41E+01	2.49E-02	7.41E+01	7.41E+01
Positive:OrderCORACIIFORMES	8.57E-01	4.95E-03	8.53E-01	8.62E-01
Positive:OrderCUCULIFORMES	-1.62E-01	1.72E-02	-1.79E-01	-1.44E-01
Positive:OrderFALCONIFORMES	-1.15E+00	7.63E-03	-1.16E+00	-1.14E+00
Positive:OrderGALLIFORMES	-1.95E+00	1.16E-02	-1.96E+00	-1.93E+00
Positive:OrderGAVIIFORMES	-2.32E-01	7.43E-03	-2.40E-01	-2.25E-01
Positive:OrderGRUIIFORMES	5.15E+01	8.86E-03	5.15E+01	5.15E+01
Positive:OrderPELECANIFORMES	-6.72E-02	1.15E-02	-7.87E-02	-5.56E-02
Positive:OrderPICIFORMES	5.42E-01	7.07E-02	4.71E-01	6.13E-01
Positive:OrderPODICIPEDIFORMES	5.08E-01	1.24E-02	4.95E-01	5.20E-01
Positive:OrderPROCELLARIIFORMES	-1.83E+00	2.23E-02	-1.85E+00	-1.81E+00
Positive:OrderSTRIGIFORMES	-9.40E-01	7.08E-03	-9.47E-01	-9.33E-01
Unchanged:(Intercept)	-3.84E+01	5.16E-02	-3.84E+01	-3.83E+01
Unchanged:mean_t_diff_nb	-6.55E-01	3.05E-02	-6.85E-01	-6.24E-01
Unchanged:Gen_length	1.51E-01	7.33E-02	7.73E-02	2.24E-01
Unchanged:Alt_min_nb	-5.90E-03	2.13E-03	-8.04E-03	-3.77E-03

Unchanged:Dispersal_distanceL	-1.33E+00	9.78E-02	-1.42E+00	-1.23E+00
Unchanged:T_range_nb	4.76E-02	2.02E-02	2.74E-02	6.78E-02
Unchanged:OrderANSERIFORMES	3.78E+01	3.04E-02	3.78E+01	3.79E+01
Unchanged:OrderBUCEROTIFORMES	-1.03E+01	5.99E-25	-1.03E+01	-1.03E+01
Unchanged:OrderCAPRIMULGIFORMES	4.11E+01	6.29E-02	4.10E+01	4.11E+01
Unchanged:OrderCHARADRIIFORMES	3.81E+01	4.82E-02	3.80E+01	3.81E+01
Unchanged:OrderCICONIIFORMES	-3.00E+00	2.13E-42	-3.00E+00	-3.00E+00
Unchanged:OrderCOLUMBIFORMES	1.14E+02	9.92E-03	1.14E+02	1.14E+02
Unchanged:OrderCORACIIFORMES	-1.76E+01	8.55E-28	-1.76E+01	-1.76E+01
Unchanged:OrderCUCULIFORMES	-2.29E+01	8.78E-30	-2.29E+01	-2.29E+01
Unchanged:OrderFALCONIFORMES	-2.21E+01	1.42E-29	-2.21E+01	-2.21E+01
Unchanged:OrderGALLIFORMES	-3.11E+01	2.43E-32	-3.11E+01	-3.11E+01
Unchanged:OrderGAVIIFORMES	-1.49E+01	1.57E-26	-1.49E+01	-1.49E+01
Unchanged:OrderGRUIIFORMES	9.05E+01	1.47E-02	9.05E+01	9.06E+01
Unchanged:OrderPASSERIFORMES	3.95E+01	1.68E-01	3.93E+01	3.96E+01
Unchanged:OrderPELECANIFORMES	-2.15E+01	3.69E-29	-2.15E+01	-2.15E+01
Unchanged:OrderPICIFORMES	4.05E+01	5.53E-02	4.05E+01	4.06E+01
Unchanged:OrderPODICIPEDIFORMES	-1.39E+01	2.87E-26	-1.39E+01	-1.39E+01
Unchanged:OrderPROCELLARIIFORMES	-5.26E+01	1.48E-40	-5.26E+01	-5.26E+01
Unchanged:OrderPSITTACIFORMES	-6.02E+00	3.42E-44	-6.02E+00	-6.02E+00
Unchanged:OrderSPHENISCIFORMES	-5.13E+01	5.44E-41	-5.13E+01	-5.13E+01
Unchanged:OrderSTRIGIFORMES	4.06E+01	7.99E-03	4.06E+01	4.06E+01
Unchanged:OrderSULIFORMES	2.00E+00	1.23E-41	2.00E+00	2.00E+00

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Supplementary Table 6 | Mammal threatened species identified from models as likely to have already been negatively impacted by climate change (total species considered 873).

Order	Family	Binomial
CARNIVORA	FELIDAE	Acinonyx jubatus
CARNIVORA	CANIDAE	Canis rufus
CARNIVORA	FELIDAE	Pardofelis badia
CARNIVORA	VIVERRIDAE	Diplogale hosei
CARNIVORA	FELIDAE	Felis nigripes
CARNIVORA	EUPLERIDAE	Galidictis grandidieri
CARNIVORA	MUSTELIDAE	Lontra provocax
CARNIVORA	CANIDAE	Lycaon pictus
CARNIVORA	FELIDAE	Lynx pardinus
CARNIVORA	EUPLERIDAE	Mungotictis decemlineata
CARNIVORA	MUSTELIDAE	Mustela lutreola
CARNIVORA	MUSTELIDAE	Mustela nigripes
CARNIVORA	PROCYONIDAE	Procyon pygmaeus
CARNIVORA	FELIDAE	Panthera uncia
CARNIVORA	CANIDAE	Urocyon littoralis
CARNIVORA	URSIDAE	Ursus maritimus
CARNIVORA	MUSTELIDAE	Vormela peregusna
CARNIVORA	HERPESTIDAE	Bdeogale omnivora
CETARTIODACTYLA	BOVIDAE	Addax nasomaculatus
CETARTIODACTYLA	BOVIDAE	Ammodorcas clarkei
CETARTIODACTYLA	BOVIDAE	Ammotragus lervia
CETARTIODACTYLA	CERVIDAE	Axis calamianensis
CETARTIODACTYLA	CERVIDAE	Axis kuhlii
CETARTIODACTYLA	SUIDAE	Babyrousa babyrussa
CETARTIODACTYLA	BOVIDAE	Bison bonasus
CETARTIODACTYLA	CERVIDAE	Blastocerus dichotomus
CETARTIODACTYLA	BOVIDAE	Bos sauveli
CETARTIODACTYLA	BOVIDAE	Bubalus depressicornis
CETARTIODACTYLA	BOVIDAE	Bubalus quarlesi
CETARTIODACTYLA	BOVIDAE	Capra aegagrus
CETARTIODACTYLA	BOVIDAE	Capra caucasica
CETARTIODACTYLA	BOVIDAE	Capra nubiana
CETARTIODACTYLA	TAYASSUIDAE	Catagonus wagneri
CETARTIODACTYLA	BOVIDAE	Cephalophus adersi
CETARTIODACTYLA	BOVIDAE	Cephalophus spadix
CETARTIODACTYLA	CERVIDAE	Rucervus duvaucelii
CETARTIODACTYLA	CERVIDAE	Rusa alfredi
CETARTIODACTYLA	CERVIDAE	Dama mesopotamica
CETARTIODACTYLA	BOVIDAE	Beatragus hunteri
CETARTIODACTYLA	BOVIDAE	Dorcatragus megalotis
CETARTIODACTYLA	BOVIDAE	Gazella cuvieri
CETARTIODACTYLA	BOVIDAE	Nanger dama
CETARTIODACTYLA	BOVIDAE	Gazella dorcas

CETARTIODACTYLA	BOVIDAE	Gazella gazella
CETARTIODACTYLA	BOVIDAE	Gazella leptoceros
CETARTIODACTYLA	BOVIDAE	Eudorcas rufifrons
CETARTIODACTYLA	BOVIDAE	Gazella spekei
CETARTIODACTYLA	BOVIDAE	Gazella subgutturosa
CETARTIODACTYLA	BOVIDAE	Arabitragus jayakari
CETARTIODACTYLA	CERVIDAE	Hippocamelus bisulcus
CETARTIODACTYLA	HIPPOPOTAMIDAE	Hippopotamus amphibius
CETARTIODACTYLA	CERVIDAE	Hydropotes inermis
CETARTIODACTYLA	BOVIDAE	Kobus megaceros
CETARTIODACTYLA	MOSCHIDAE	Moschus moschiferus
CETARTIODACTYLA	CERVIDAE	Muntiacus crinifrons
CETARTIODACTYLA	BOVIDAE	Naemorhedus caudatus
CETARTIODACTYLA	BOVIDAE	Oryx leucoryx
CETARTIODACTYLA	BOVIDAE	Ovis orientalis
CETARTIODACTYLA	BOVIDAE	Procapra przewalskii
CETARTIODACTYLA	CERVIDAE	Pudu puda
CETARTIODACTYLA	BOVIDAE	Saiga tatarica
CETARTIODACTYLA	SUIDAE	Sus cebifrons
CETARTIODACTYLA	SUIDAE	Sus ahoenobarbus
CETARTIODACTYLA	BOVIDAE	Tragelaphus buxtoni
CETARTIODACTYLA	TRAGULIDAE	Tragulus nigricans
CETARTIODACTYLA	CERVIDAE	Mazama pandora
CETARTIODACTYLA	CERVIDAE	Mazama bororo
CETARTIODACTYLA	SUIDAE	Sus barbatus
CETARTIODACTYLA	CERVIDAE	Muntiacus vuquangensis
CETARTIODACTYLA	BOVIDAE	Nanger soemmerringii
CETARTIODACTYLA	CAMELIDAE	Camelus ferus
CETARTIODACTYLA	SUIDAE	Babyrousa celebensis
CETARTIODACTYLA	SUIDAE	Babyrousa togeanensis
CETARTIODACTYLA	MOSCHIDAE	Moschus anhuiensis
DASYUROMORPHIA	DASYURIDAE	Dasyuroides byrnei
DASYUROMORPHIA	DASYURIDAE	Dasyurus hallucatus
DASYUROMORPHIA	DASYURIDAE	Murexia rothschildi
DASYUROMORPHIA	MYRMECOBIIDAE	Myrmecobius fasciatus
DASYUROMORPHIA	DASYURIDAE	Parantechinus apicalis
DASYUROMORPHIA	DASYURIDAE	Phascogale pirata
DASYUROMORPHIA	DASYURIDAE	Pseudantechinus mimulus
DASYUROMORPHIA	DASYURIDAE	Sminthopsis psammophila
DASYUROMORPHIA	DASYURIDAE	Sminthopsis aitkeni
DASYUROMORPHIA	DASYURIDAE	Sminthopsis butleri
DASYUROMORPHIA	DASYURIDAE	Sminthopsis leucopus
DASYUROMORPHIA	DASYURIDAE	Sarcophilus harrisii
DIPROTODONTIA	POTOROIDAE	Bettongia penicillata
DIPROTODONTIA	POTOROIDAE	Bettongia tropica
DIPROTODONTIA	BURRAMYIDAE	Burramys parvus

DIPROTODONTIA	PETAURIDAE	Dactylopsila tatei
DIPROTODONTIA	MACROPODIDAE	Dendrolagus dorianus
DIPROTODONTIA	MACROPODIDAE	Dendrolagus goodfellowi
DIPROTODONTIA	MACROPODIDAE	Dendrolagus inustus
DIPROTODONTIA	MACROPODIDAE	Dendrolagus matschiei
DIPROTODONTIA	MACROPODIDAE	Dendrolagus ursinus
DIPROTODONTIA	MACROPODIDAE	Dendrolagus scottae
DIPROTODONTIA	MACROPODIDAE	Dendrolagus mbaiso
DIPROTODONTIA	MACROPODIDAE	Dorcopsis atrata
DIPROTODONTIA	MACROPODIDAE	Dorcopsis luctuosa
DIPROTODONTIA	PETAURIDAE	Gymnobelideus leadbeateri
DIPROTODONTIA	MACROPODIDAE	Lagorchestes hirsutus
DIPROTODONTIA	MACROPODIDAE	Lagostrophus fasciatus
DIPROTODONTIA	VOMBATIDAE	Lasiorhinus krefftii
DIPROTODONTIA	MACROPODIDAE	Onychogalea fraenata
DIPROTODONTIA	PETAURIDAE	Petaurus abidi
DIPROTODONTIA	PETAURIDAE	Petaurus gracilis
DIPROTODONTIA	MACROPODIDAE	Petrogale persephone
DIPROTODONTIA	PHALANGERIDAE	Phalanger lullulae
DIPROTODONTIA	PHALANGERIDAE	Phalanger matanim
DIPROTODONTIA	POTOROIDAE	Potorous longipes
DIPROTODONTIA	POTOROIDAE	Potorous gilbertii
DIPROTODONTIA	PSEUDOCHEIRIDAE	Pseudocheirus occidentalis
DIPROTODONTIA	MACROPODIDAE	Setonix brachyurus
DIPROTODONTIA	PHALANGERIDAE	Spilocuscus papuensis
DIPROTODONTIA	PHALANGERIDAE	Spilocuscus rufoniger
DIPROTODONTIA	PHALANGERIDAE	Strigocuscus celebensis
DIPROTODONTIA	MACROPODIDAE	Thylogale brunii
DIPROTODONTIA	MACROPODIDAE	Thylogale calabyi
DIPROTODONTIA	MACROPODIDAE	Thylogale browni
DIPROTODONTIA	PSEUDOCHEIRIDAE	Pseudochirops coronatus
DIPROTODONTIA	PHALANGERIDAE	Ailurops ursinus
DIPROTODONTIA	PSEUDOCHEIRIDAE	Pseudochirulus schlegeli
DIPROTODONTIA	PHALANGERIDAE	Phalanger matabiru
DIPROTODONTIA	PHALANGERIDAE	Ailurops melanotis
DIPROTODONTIA	MACROPODIDAE	Thylogale lanatus
DIPROTODONTIA	PHALANGERIDAE	Spilocuscus wilsoni
DIPROTODONTIA	MACROPODIDAE	Dendrolagus mayri
DIPROTODONTIA	MACROPODIDAE	Dendrolagus pulcherrimus
DIPROTODONTIA	MACROPODIDAE	Dendrolagus notatus
DIPROTODONTIA	MACROPODIDAE	Dendrolagus stellarum
LAGOMORPHA	LEPORIDAE	Bunolagus monticularis
LAGOMORPHA	LEPORIDAE	Lepus flavigularis
LAGOMORPHA	LEPORIDAE	Lepus castroviejoi
LAGOMORPHA	LEPORIDAE	Pentalagus furnessi
LAGOMORPHA	LEPORIDAE	Sylvilagus mansuetus

LAGOMORPHA	LEPORIDAE	Sylvilagus transitionalis
LAGOMORPHA	OCHOTONIDAE	Ochotona hoffmanni
LAGOMORPHA	LEPORIDAE	Lepus corsicanus
LAGOMORPHA	LEPORIDAE	Sylvilagus robustus
LAGOMORPHA	OCHOTONIDAE	Ochotona argentata
PERISSODACTYLA	RHINOCEROTIDAE	Dicerorhinus sumatrensis
PERISSODACTYLA	RHINOCEROTIDAE	Diceros bicornis
PERISSODACTYLA	EQUIDAE	Equus africanus
PERISSODACTYLA	EQUIDAE	Equus grevyi
PERISSODACTYLA	EQUIDAE	Equus hemionus
PERISSODACTYLA	EQUIDAE	Equus zebra
PERISSODACTYLA	RHINOCEROTIDAE	Rhinoceros sondaicus
PERISSODACTYLA	TAPIRIDAE	Tapirus terrestris
PRIMATES	ATELIDAE	Alouatta pigra
PRIMATES	ATELIDAE	Alouatta ululata
PRIMATES	AOTIDAE	Aotus miconax
PRIMATES	AOTIDAE	Aotus griseimembra
PRIMATES	AOTIDAE	Aotus lemurinus
PRIMATES	ATELIDAE	Ateles belzebuth
PRIMATES	ATELIDAE	Ateles geoffroyi
PRIMATES	ATELIDAE	Ateles marginatus
PRIMATES	ATELIDAE	Ateles paniscus
PRIMATES	INDRIIDAE	Avahi occidentalis
PRIMATES	ATELIDAE	Brachyteles arachnoides
PRIMATES	ATELIDAE	Brachyteles hypoxanthus
PRIMATES	PITHECIIDAE	Cacajao calvus
PRIMATES	PITHECIIDAE	Callicebus oenanthe
PRIMATES	PITHECIIDAE	Callicebus olallae
PRIMATES	PITHECIIDAE	Callicebus personatus
PRIMATES	CALLITRICHIDAE	Callimico goeldii
PRIMATES	CALLITRICHIDAE	Callithrix aurita
PRIMATES	CALLITRICHIDAE	Callithrix flaviceps
PRIMATES	CEBIDAE	Cebus xanthosternos
PRIMATES	CERCOPITHECIDAE	Cercocebus galeritus
PRIMATES	CERCOPITHECIDAE	Cercocebus torquatus
PRIMATES	CERCOPITHECIDAE	Cercocebus sanjei
PRIMATES	CERCOPITHECIDAE	Cercocebus atys
PRIMATES	CERCOPITHECIDAE	Cercopithecus diana
PRIMATES	CERCOPITHECIDAE	Cercopithecus dryas
PRIMATES	CERCOPITHECIDAE	Cercopithecus erythrogaster
PRIMATES	CERCOPITHECIDAE	Cercopithecus erythrotis
PRIMATES	CERCOPITHECIDAE	Cercopithecus hamlyni
PRIMATES	CERCOPITHECIDAE	Cercopithecus lhoesti
PRIMATES	CERCOPITHECIDAE	Cercopithecus preussi
PRIMATES	CERCOPITHECIDAE	Cercopithecus sclateri
PRIMATES	CERCOPITHECIDAE	Cercopithecus solatus

PRIMATES	CERCOPITHECIDAE	Chlorocebus djamdjamensis
PRIMATES	PITHECIIDAE	Chiropotes albinasus
PRIMATES	CERCOPITHECIDAE	Colobus polykomos
PRIMATES	CERCOPITHECIDAE	Colobus satanas
PRIMATES	CERCOPITHECIDAE	Colobus vellerosus
PRIMATES	LEMURIDAE	Eulemur coronatus
PRIMATES	LEMURIDAE	Eulemur mongoz
PRIMATES	LEMURIDAE	Eulemur rubriventer
PRIMATES	LEMURIDAE	Eulemur albifrons
PRIMATES	LEMURIDAE	Eulemur cinereiceps
PRIMATES	LEMURIDAE	Eulemur collaris
PRIMATES	LEMURIDAE	Eulemur sanfordi
PRIMATES	HOMINIDAE	Gorilla gorilla
PRIMATES	LEMURIDAE	Hapalemur aureus
PRIMATES	LEMURIDAE	Hapalemur griseus
PRIMATES	LEMURIDAE	Prolemur simus
PRIMATES	LEMURIDAE	Hapalemur alaotrensis
PRIMATES	LEMURIDAE	Hapalemur occidentalis
PRIMATES	HYLOBATIDAE	Hylobates agilis
PRIMATES	HYLOBATIDAE	Hylobates klossii
PRIMATES	HYLOBATIDAE	Hylobates lar
PRIMATES	HYLOBATIDAE	Hylobates moloch
PRIMATES	HYLOBATIDAE	Hylobates muelleri
PRIMATES	HYLOBATIDAE	Hylobates pileatus
PRIMATES	INDRIIDAE	Indri indri
PRIMATES	ATELIDAE	Lagothrix lagotricha
PRIMATES	CALLITRICHIDAE	Leontopithecus caissara
PRIMATES	CALLITRICHIDAE	Leontopithecus chrysopygus
PRIMATES	CALLITRICHIDAE	Leontopithecus rosalia
PRIMATES	LEPILEMURIDAE	Lepilemur edwardsi
PRIMATES	LEPILEMURIDAE	Lepilemur septentrionalis
PRIMATES	LORISIDAE	Loris tardigradus
PRIMATES	CERCOPITHECIDAE	Macaca arctoides
PRIMATES	CERCOPITHECIDAE	Macaca maura
PRIMATES	CERCOPITHECIDAE	Macaca nemestrina
PRIMATES	CERCOPITHECIDAE	Macaca nigra
PRIMATES	CERCOPITHECIDAE	Macaca ochreata
PRIMATES	CERCOPITHECIDAE	Macaca silenus
PRIMATES	CERCOPITHECIDAE	Macaca sinica
PRIMATES	CERCOPITHECIDAE	Macaca sylvanus
PRIMATES	CERCOPITHECIDAE	Macaca tonkeana
PRIMATES	CERCOPITHECIDAE	Macaca nigrescens
PRIMATES	CERCOPITHECIDAE	Macaca hecki
PRIMATES	CERCOPITHECIDAE	Mandrillus leucophaeus
PRIMATES	CERCOPITHECIDAE	Mandrillus sphinx
PRIMATES	CERCOPITHECIDAE	Nasalis larvatus

PRIMATES	LORISIDAE	Nycticebus pygmaeus
PRIMATES	HOMINIDAE	Pan paniscus
PRIMATES	HOMINIDAE	Pan troglodytes
PRIMATES	CHEIROGALEIDAE	Phaner parienti
PRIMATES	CHEIROGALEIDAE	Phaner electromontis
PRIMATES	HOMINIDAE	Pongo pygmaeus
PRIMATES	CERCOPITHECIDAE	Presbytis comata
PRIMATES	CERCOPITHECIDAE	Presbytis frontata
PRIMATES	CERCOPITHECIDAE	Presbytis hosei
PRIMATES	CERCOPITHECIDAE	Presbytis melalophos
PRIMATES	CERCOPITHECIDAE	Presbytis potenziani
PRIMATES	CERCOPITHECIDAE	Presbytis thomasi
PRIMATES	CERCOPITHECIDAE	Procolobus badius
PRIMATES	INDRIIDAE	Propithecus tattersalli
PRIMATES	INDRIIDAE	Propithecus verreauxi
PRIMATES	INDRIIDAE	Propithecus coquereli
PRIMATES	INDRIIDAE	Propithecus coronatus
PRIMATES	INDRIIDAE	Propithecus deckenii
PRIMATES	INDRIIDAE	Propithecus diadema
PRIMATES	INDRIIDAE	Propithecus edwardsi
PRIMATES	INDRIIDAE	Propithecus candidus
PRIMATES	INDRIIDAE	Propithecus perrieri
PRIMATES	CERCOPITHECIDAE	Rhinopithecus avunculus
PRIMATES	CERCOPITHECIDAE	Rhinopithecus brelichi
PRIMATES	CERCOPITHECIDAE	Rhinopithecus roxellana
PRIMATES	CERCOPITHECIDAE	Rhinopithecus bieti
PRIMATES	CALLITRICHIDAE	Saguinus leucopus
PRIMATES	CALLITRICHIDAE	Saguinus oedipus
PRIMATES	CEBIDAE	Saimiri oerstedii
PRIMATES	CEBIDAE	Saimiri vanzolinii
PRIMATES	CERCOPITHECIDAE	Simias concolor
PRIMATES	TARSIIDAE	Tarsius bancanus
PRIMATES	TARSIIDAE	Tarsius dentatus
PRIMATES	TARSIIDAE	Tarsius tarsier
PRIMATES	TARSIIDAE	Tarsius sangirensis
PRIMATES	TARSIIDAE	Tarsius pelengensis
PRIMATES	CERCOPITHECIDAE	Trachypithecus auratus
PRIMATES	CERCOPITHECIDAE	Trachypithecus geei
PRIMATES	CERCOPITHECIDAE	Trachypithecus phayrei
PRIMATES	CERCOPITHECIDAE	Trachypithecus pileatus
PRIMATES	CERCOPITHECIDAE	Trachypithecus vetulus
PRIMATES	CERCOPITHECIDAE	Trachypithecus delacouri
PRIMATES	CERCOPITHECIDAE	Trachypithecus laotum
PRIMATES	CERCOPITHECIDAE	Trachypithecus poliocephalus
PRIMATES	LEMURIDAE	Varecia variegata
PRIMATES	LEMURIDAE	Varecia rubra

PRIMATES	CHEIROGALEIDAE	Microcebus ravelobensis
PRIMATES	LORISIDAE	Nycticebus bengalensis
PRIMATES	LORISIDAE	Nycticebus coucang
PRIMATES	LORISIDAE	Nycticebus menagensis
PRIMATES	LORISIDAE	Nycticebus javanicus
PRIMATES	HYLOBATIDAE	Nomascus concolor
PRIMATES	HYLOBATIDAE	Nomascus gabriellae
PRIMATES	HYLOBATIDAE	Symphalangus syndactylus
PRIMATES	HOMINIDAE	Pongo abelii
PRIMATES	CERCOPITHECIDAE	Macaca leonina
PRIMATES	CERCOPITHECIDAE	Macaca pagensis
PRIMATES	CERCOPITHECIDAE	Macaca siberu
PRIMATES	CERCOPITHECIDAE	Presbytis chrysomelas
PRIMATES	CERCOPITHECIDAE	Pygathrix nemaeus
PRIMATES	CERCOPITHECIDAE	Pygathrix cinerea
PRIMATES	CERCOPITHECIDAE	Pygathrix nigripes
PRIMATES	CERCOPITHECIDAE	Semnopithecus ajax
PRIMATES	CERCOPITHECIDAE	Semnopithecus hypoleucos
PRIMATES	CERCOPITHECIDAE	Trachypithecus francoisi
PRIMATES	CERCOPITHECIDAE	Trachypithecus shortridgei
PRIMATES	CERCOPITHECIDAE	Trachypithecus germaini
PRIMATES	HYLOBATIDAE	Hoolock hoolock
PRIMATES	HYLOBATIDAE	Hoolock leuconedys
PRIMATES	HYLOBATIDAE	Hylobates albibarbis
PRIMATES	HYLOBATIDAE	Nomascus leucogenys
PRIMATES	HYLOBATIDAE	Nomascus siki
PRIMATES	CALLITRICHIDAE	Mico leucippe
PRIMATES	AOTIDAE	Aotus brumbacki
PRIMATES	ATELIDAE	Oreonax flavicauda
PRIMATES	ATELIDAE	Lagothrix cana
PRIMATES	ATELIDAE	Lagothrix lugens
PRIMATES	ATELIDAE	Lagothrix poeppigii
PRIMATES	PITHECIIDAE	Callicebus ornatus
PRIMATES	PITHECIIDAE	Callicebus barbarabrownae
PRIMATES	PITHECIIDAE	Callicebus melanochir
PRIMATES	PITHECIIDAE	Callicebus medemi
PRIMATES	PITHECIIDAE	Callicebus coimbrai
PRIMATES	PITHECIIDAE	Chiropotes satanas
PRIMATES	ATELIDAE	Alouatta belzebul
PRIMATES	ATELIDAE	Ateles hybridus
PRIMATES	CERCOPITHECIDAE	Procolobus kirkii
PRIMATES	HOMINIDAE	Gorilla beringei
PRIMATES	CERCOPITHECIDAE	Procolobus pennantii
PRIMATES	CERCOPITHECIDAE	Procolobus gordonorum
PRIMATES	CEBIDAE	Cebus kaapori
PRIMATES	CALLITRICHIDAE	Leontopithecus chrysomelas

PRIMATES	CALLITRICHIDAE	Saguinus bicolor
PRIMATES	GALAGIDAE	Galagoides rondoensis
PRIMATES	CERCOPITHECIDAE	Trachypithecus hatinhensis
PRIMATES	CERCOPITHECIDAE	Procolobus preussi
PRIMATES	ATELIDAE	Ateles chamek
PRIMATES	PITHECIIDAE	Callicebus modestus
PRIMATES	PITHECIIDAE	Pithecia albicans
PRIMATES	CHEIROGALEIDAE	Microcebus tavaratra
PRIMATES	CHEIROGALEIDAE	Microcebus sambiranensis
PRIMATES	CHEIROGALEIDAE	Microcebus berthae
PRIMATES	CALLITRICHIDAE	Callibella humilis
PRIMATES	HYLOBATIDAE	Nomascus nasutus
PRIMATES	HYLOBATIDAE	Nomascus hainanus
PRIMATES	CALLITRICHIDAE	Saguinus niger
PRIMATES	CEBIDAE	Cebus robustus
PRIMATES	PITHECIIDAE	Chiropotes utahickae
PRIMATES	ATELIDAE	Alouatta discolor
PRIMATES	CERCOPITHECIDAE	Trachypithecus johnii
PRIMATES	ATELIDAE	Ateles fusciceps
PRIMATES	CEBIDAE	Cebus flavius
PRIMATES	INDRIIDAE	Avahi cleesei
PRIMATES	LEMURIDAE	Hapalemur meridionalis
PRIMATES	PITHECIIDAE	Cacajao ayresi
PRIMATES	CERCOPITHECIDAE	Presbytis natunae
PRIMATES	CERCOPITHECIDAE	Macaca munzala
PRIMATES	PITHECIIDAE	Cacajao hosomi
PRIMATES	LEPILEMURIDAE	Lepilemur ankaranensis
PRIMATES	CERCOPITHECIDAE	Rungwecebus kipunji
PROBOSCIDEA	ELEPHANTIDAE	Elephas maximus
PROBOSCIDEA	ELEPHANTIDAE	Loxodonta africana
RODENTIA	DIPODIDAE	Allactaga tetradactyla
RODENTIA	CRICETIDAE	Arvicola sapidus
RODENTIA	CHINCHILLIDAE	Chinchilla lanigera
RODENTIA	SCIURIDAE	Cynomys parvidens
RODENTIA	CRICETIDAE	Dinaromys bogdanovi
RODENTIA	MURIDAE	Diplothrix legata
RODENTIA	HETEROMYIDAE	Dipodomys gravipes
RODENTIA	HETEROMYIDAE	Dipodomys ingens
RODENTIA	HETEROMYIDAE	Dipodomys stephensi
RODENTIA	HETEROMYIDAE	Dipodomys nitratoides
RODENTIA	HETEROMYIDAE	Dipodomys insularis
RODENTIA	HETEROMYIDAE	Dipodomys margaritae
RODENTIA	ECHIMYIDAE	Callistomys pictus
RODENTIA	ECHIMYIDAE	Phyllomys unicolor
RODENTIA	MURIDAE	Gerbillus hesperinus
RODENTIA	MURIDAE	Gerbillus hoogstraali

RODENTIA	SCIURIDAE	Hyosciurus ileile
RODENTIA	MURIDAE	Leporillus apicalis
RODENTIA	MURIDAE	Leporillus conditor
RODENTIA	MURIDAE	Meriones dahlia
RODENTIA	MURIDAE	Meriones sacramenti
RODENTIA	CAPROMYIDAE	Mesocapromys angelcabrerai
RODENTIA	CRICETIDAE	Microtus bavaricus
RODENTIA	GLIRIDAE	Myomimus roachi
RODENTIA	CAPROMYIDAE	Mysateles meridionalis
RODENTIA	NESOMYIDAE	Mystromys albicaudatus
RODENTIA	CRICETIDAE	Neotoma bryanti
RODENTIA	MURIDAE	Nesokia bunnii
RODENTIA	CRICETIDAE	Nesoryzomys fernandinae
RODENTIA	MURIDAE	Notomys fuscus
RODENTIA	MURIDAE	Notomys cervinus
RODENTIA	OCTODONTIDAE	Octodon pacificus
RODENTIA	CRICETIDAE	Peromyscus caniceps
RODENTIA	CRICETIDAE	Peromyscus guardia
RODENTIA	CRICETIDAE	Peromyscus sejugis
RODENTIA	MURIDAE	Pseudomys fieldi
RODENTIA	MURIDAE	Pseudomys fumeus
RODENTIA	MURIDAE	Pseudomys oralis
RODENTIA	MURIDAE	Pseudomys australis
RODENTIA	MURIDAE	Rattus montanus
RODENTIA	MURIDAE	Rattus xanthurus
RODENTIA	DIPODIDAE	Sicista armenica
RODENTIA	SCIURIDAE	Spermophilus citellus
RODENTIA	SCIURIDAE	Spermophilus mohavensis
RODENTIA	SCIURIDAE	Spermophilus atricapillus
RODENTIA	MURIDAE	Tokudaia muenninki
RODENTIA	MURIDAE	Tokudaia osimensis
RODENTIA	CRICETIDAE	Wilfredomys oenax
RODENTIA	MURIDAE	Zyzomys pedunculatus
RODENTIA	MURIDAE	Zyzomys palatalis
RODENTIA	MURIDAE	Bullimus gamay
RODENTIA	MURIDAE	Melomys talaudium
RODENTIA	MURIDAE	Apomys camiguinensis
RODENTIA	ECHIMYIDAE	Trinomys eliasi
RODENTIA	ECHIMYIDAE	Trinomys yonenagae
RODENTIA	HETEROMYIDAE	Chaetodipus dalquesti
RODENTIA	CRICETIDAE	Oxymycterus josei
RODENTIA	MURIDAE	Melomys matambuai
RODENTIA	CRICETIDAE	Juliomys rimofrons
RODENTIA	CTENOMYIDAE	Ctenomys lami
RODENTIA	HETEROMYIDAE	Heteromys oasicus
RODENTIA	MURIDAE	Tokudaia tokunoshimensis

RODENTIA	OCTODONTIDAE	Salinoctomys loschalchalersorum
RODENTIA	MURIDAE	Melomys caurinus
RODENTIA	MURIDAE	Uromys boeadii

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Supplementary Table 7 | Bird threatened species identified from models as likely to have already been negatively impacted by climate change (total number of species considered 1272).

Order	Family	Binomial
ACCIPITRIFORMES	Accipitridae	<i>Aquila adalberti</i>
ACCIPITRIFORMES	Accipitridae	<i>Buteo galapagoensis</i>
ACCIPITRIFORMES	Accipitridae	<i>Buteo ridgwayi</i>
ACCIPITRIFORMES	Accipitridae	<i>Clanga clanga</i>
ACCIPITRIFORMES	Accipitridae	<i>Gyps rueppelli</i>
ACCIPITRIFORMES	Accipitridae	<i>Haliaeetus leucoryphus</i>
ACCIPITRIFORMES	Accipitridae	<i>Haliaeetus pelagicus</i>
ACCIPITRIFORMES	Accipitridae	<i>Neophron percnopterus</i>
ANSERIFORMES	Anatidae	<i>Anas chlorotis</i>
ANSERIFORMES	Anatidae	<i>Anas wyvilliana</i>
ANSERIFORMES	Anatidae	<i>Anser cygnoid</i>
ANSERIFORMES	Anatidae	<i>Anser erythropus</i>
ANSERIFORMES	Anatidae	<i>Dendrocygna arborea</i>
ANSERIFORMES	Anatidae	<i>Hymenolaimus malacorhynchos</i>
ANSERIFORMES	Anatidae	<i>Marmaronetta angustirostris</i>
ANSERIFORMES	Anatidae	<i>Mergus squamatus</i>
ANSERIFORMES	Anatidae	<i>Oxyura leucocephala</i>
ANSERIFORMES	Anatidae	<i>Polysticta stelleri</i>
CAPRIMULGIFORMES	Apodidae	<i>Aerodramus bartschi</i>
CAPRIMULGIFORMES	Trochilidae	<i>Amazilia castaneiventris</i>
CAPRIMULGIFORMES	Caprimulgidae	<i>Antrostomus noctitherus</i>
CAPRIMULGIFORMES	Caprimulgidae	<i>Caprimulgus concretus</i>
CAPRIMULGIFORMES	Trochilidae	<i>Chaetocercus berlepschi</i>
CAPRIMULGIFORMES	Caprimulgidae	<i>Eleothreptus candicans</i>
CAPRIMULGIFORMES	Caprimulgidae	<i>Eurostopodus diabolicus</i>
CAPRIMULGIFORMES	Trochilidae	<i>Glaucis dohrnii</i>
CHARADRIIFORMES	Scolopacidae	<i>Calidris tenuirostris</i>
CHARADRIIFORMES	Charadriidae	<i>Charadrius obscurus</i>
CHARADRIIFORMES	Recurvirostridae	<i>Himantopus novaezelandiae</i>
CHARADRIIFORMES	Laridae	<i>Larus bulleri</i>
CHARADRIIFORMES	Laridae	<i>Larus relictus</i>
CHARADRIIFORMES	Scolopacidae	<i>Numenius borealis</i>
CHARADRIIFORMES	Scolopacidae	<i>Numenius madagascariensis</i>
CHARADRIIFORMES	Scolopacidae	<i>Numenius tahitiensis</i>
CHARADRIIFORMES	Scolopacidae	<i>Numenius tenuirostris</i>
CHARADRIIFORMES	Pedionomidae	<i>Pedionomus torquatus</i>
CHARADRIIFORMES	Laridae	<i>Rissa brevirostris</i>
CHARADRIIFORMES	Rostratulidae	<i>Rostratula australis</i>
CHARADRIIFORMES	Laridae	<i>Rynchops albicollis</i>
CHARADRIIFORMES	Laridae	<i>Saundersilarus saundersi</i>
CHARADRIIFORMES	Scolopacidae	<i>Scolopax mira</i>
CHARADRIIFORMES	Laridae	<i>Sterna acuticauda</i>

CHARADRIIFORMES	Laridae	Sternula nereis
CHARADRIIFORMES	Alcidae	Synthliboramphus craveri
CHARADRIIFORMES	Alcidae	Synthliboramphus hypoleucus
CHARADRIIFORMES	Alcidae	Synthliboramphus scrippsi
CHARADRIIFORMES	Alcidae	Synthliboramphus wumizusume
CHARADRIIFORMES	Laridae	Thalasseus bernsteini
CHARADRIIFORMES	Charadriidae	Thinornis cucullatus
CHARADRIIFORMES	Scolopacidae	Tringa guttifer
CHARADRIIFORMES	Turnicidae	Turnix hottentottus
CHARADRIIFORMES	Charadriidae	Vanellus gregarius
CICONIIFORMES	Ciconiidae	Ciconia boyciana
CICONIIFORMES	Ciconiidae	Ciconia stormi
CICONIIFORMES	Ciconiidae	Leptoptilos javanicus
COLUMBIFORMES	Columbidae	Claravis geoffroyi
COLUMBIFORMES	Columbidae	Columba argentina
COLUMBIFORMES	Columbidae	Columba elphinstonii
COLUMBIFORMES	Columbidae	Columba eversmanni
COLUMBIFORMES	Columbidae	Columbina cyanopis
COLUMBIFORMES	Columbidae	Didunculus strigirostris
COLUMBIFORMES	Columbidae	Ducula carola
COLUMBIFORMES	Columbidae	Gallicolumba crinigera
COLUMBIFORMES	Columbidae	Gallicolumba keayi
COLUMBIFORMES	Columbidae	Gallicolumba menagei
COLUMBIFORMES	Columbidae	Gallicolumba platenae
COLUMBIFORMES	Columbidae	Geotrygon caniceps
COLUMBIFORMES	Columbidae	Phapitreron brunneiceps
COLUMBIFORMES	Columbidae	Starnoenas cyanocephala
COLUMBIFORMES	Columbidae	Alopecoenas rubescens
COLUMBIFORMES	Columbidae	Hemiphaga chathamensis
CUCULIFORMES	Cuculidae	Carpococcyx viridis
CUCULIFORMES	Cuculidae	Centropus chlororhynchos
CUCULIFORMES	Cuculidae	Centropus nigrorufus
CUCULIFORMES	Cuculidae	Centropus rectunguis
CUCULIFORMES	Cuculidae	Coccyzus rufigularis
CUCULIFORMES	Cuculidae	Phaenicophaeus pyrrhocephalus
FALCONIFORMES	Falconidae	Falco cherrug
FALCONIFORMES	Falconidae	Falco hypoleucos
GALLIFORMES	Phasianidae	Arborophila ardens
GALLIFORMES	Phasianidae	Arborophila charltonii
GALLIFORMES	Cracidae	Crax alberti
GALLIFORMES	Cracidae	Crax blumenbachii
GALLIFORMES	Cracidae	Crax pinima
GALLIFORMES	Cracidae	Crax rubra
GALLIFORMES	Megapodiidae	Eulipoa wallacei
GALLIFORMES	Megapodiidae	Leipoa ocellata
GALLIFORMES	Phasianidae	Lophura edwardsi

GALLIFORMES	Megapodiidae	Macrocephalon maleo
GALLIFORMES	Megapodiidae	Megapodius layardi
GALLIFORMES	Phasianidae	Pavo muticus
GALLIFORMES	Cracidae	Penelope ochrogaster
GALLIFORMES	Cracidae	Penelopina nigra
GALLIFORMES	Phasianidae	Perdica manipurens
GALLIFORMES	Cracidae	Pipile jacutinga
GALLIFORMES	Cracidae	Pipile pipile
GALLIFORMES	Phasianidae	Polyplectron napoleonis
GALLIFORMES	Phasianidae	Symaticus reevesii
GALLIFORMES	Phasianidae	Tragopan caboti
GALLIFORMES	Phasianidae	Tympanuchus cupido
GALLIFORMES	Megapodiidae	Aepyodius bruijnii
GRUIFORMES	Gruidae	Antigone vipio
GRUIFORMES	Rallidae	Coturnicops exquisitus
GRUIFORMES	Rallidae	Cyanolimnas cerverai
GRUIFORMES	Rallidae	Fulica alai
GRUIFORMES	Gruidae	Grus americana
GRUIFORMES	Gruidae	Grus japonensis
GRUIFORMES	Gruidae	Grus monacha
GRUIFORMES	Rallidae	Gymnocrex rosenbergii
GRUIFORMES	Rallidae	Laterallus levraudi
GRUIFORMES	Rallidae	Laterallus xenopterus
GRUIFORMES	Gruidae	Leucogeranus leucogeranus
GRUIFORMES	Rallidae	Porzana spiloptera
GRUIFORMES	Rallidae	Rallus antarcticus
PASSERIFORMES	Sylviidae	Acrocephalus griseldis
PASSERIFORMES	Sylviidae	Acrocephalus orinus
PASSERIFORMES	Sylviidae	Acrocephalus tangorum
PASSERIFORMES	Nectariniidae	Aethopyga duyvenbodei
PASSERIFORMES	Icteridae	Agelaius tricolor
PASSERIFORMES	Icteridae	Agelaius xanthomus
PASSERIFORMES	Tyrannidae	Alecturus risora
PASSERIFORMES	Tyrannidae	Alecturus tricolor
PASSERIFORMES	Estrildidae	Amandava formosa
PASSERIFORMES	Emberizidae	Ammodramus caudatus
PASSERIFORMES	Motacillidae	Anthus nattereri
PASSERIFORMES	Cisticolidae	Apalis chariessa
PASSERIFORMES	Tyrannidae	Aphanotriccus capitalis
PASSERIFORMES	Corvidae	Aphelocoma coerulescens
PASSERIFORMES	Corvidae	Aphelocoma insularis
PASSERIFORMES	Sylviidae	Artisornis moreau
PASSERIFORMES	Atrichornithidae	Atrichornis clamosus
PASSERIFORMES	Atrichornithidae	Atrichornis rufescens
PASSERIFORMES	Furnariidae	Automolus lammi
PASSERIFORMES	Thamnophilidae	Biatas nigropectus

PASSERIFORMES	Sylviidae	Bradypterus sylvaticus
PASSERIFORMES	Vangidae	Calicalicus rufocarpalis
PASSERIFORMES	Callaeatidae	Callaeas cinereus
PASSERIFORMES	Thraupidae	Calyptophilus frugivorus
PASSERIFORMES	Cotingidae	Calyptura cristata
PASSERIFORMES	Fringillidae	Carduelis siemiradzkii
PASSERIFORMES	Fringillidae	Carduelis yarrellii
PASSERIFORMES	Cotingidae	Carpornis melanocephala
PASSERIFORMES	Parulidae	Catharopeza bishopi
PASSERIFORMES	Turdidae	Catharus bicknelli
PASSERIFORMES	Sylviidae	Chaetornis striata
PASSERIFORMES	Monarchidae	Chasiempis ibidis
PASSERIFORMES	Monarchidae	Chasiempis sclateri
PASSERIFORMES	Chloropseidae	Chloropsis flavipennis
PASSERIFORMES	Monarchidae	Clytorhynchus sanctaecrucis
PASSERIFORMES	Sturnidae	Coccycolius iris
PASSERIFORMES	Thraupidae	Conothraupis mesoleuca
PASSERIFORMES	Muscicapidae	Copsychus cebuensis
PASSERIFORMES	Campephagidae	Coracina ostenta
PASSERIFORMES	Campephagidae	Coracina typica
PASSERIFORMES	Corvidae	Corvus kubaryi
PASSERIFORMES	Corvidae	Corvus leucognaphalus
PASSERIFORMES	Corvidae	Corvus unicolor
PASSERIFORMES	Cotingidae	Cotinga maculata
PASSERIFORMES	Cotingidae	Cotinga ridgwayi
PASSERIFORMES	Furnariidae	Cranioleuca muelleri
PASSERIFORMES	Tyrannidae	Culicivora caudacuta
PASSERIFORMES	Timaliidae	Dasycrotapha speciosa
PASSERIFORMES	Dasyornithidae	Dasyornis brachypterus
PASSERIFORMES	Dendrocolaptidae	Dendrocolaptes hoffmannsi
PASSERIFORMES	Dicaeidae	Dicaeum haematostictum
PASSERIFORMES	Thamnophilidae	Dysithamnus plumbeus
PASSERIFORMES	Rhinocryptidae	Eleoscytalopus psychopompos
PASSERIFORMES	Emberizidae	Emberiza aureola
PASSERIFORMES	Emberizidae	Emberiza jankowskii
PASSERIFORMES	Emberizidae	Emberiza sulphurata
PASSERIFORMES	Estrildidae	Erythrura regia
PASSERIFORMES	Eurylaimidae	Eurylaimus samarensis
PASSERIFORMES	Eurylaimidae	Eurylaimus steerii
PASSERIFORMES	Monarchidae	Eutrichomyias rowleyi
PASSERIFORMES	Muscicapidae	Ficedula basilanica
PASSERIFORMES	Muscicapidae	Ficedula platenae
PASSERIFORMES	Thamnophilidae	Formicivora erythronotos
PASSERIFORMES	Thamnophilidae	Formicivora littoralis
PASSERIFORMES	Timaliidae	Garrulax cinereifrons
PASSERIFORMES	Corvidae	Garrulus lidthi

PASSERIFORMES	Furnariidae	Geositta poeciloptera
PASSERIFORMES	Parulidae	Geothlypis beldingi
PASSERIFORMES	Parulidae	Geothlypis flavovellata
PASSERIFORMES	Meliphagidae	Grantiella picta
PASSERIFORMES	Emberizidae	Gubernatrix cristata
PASSERIFORMES	Meliphagidae	Gymnomyza samoensis
PASSERIFORMES	Cardinalidae	Habia atrimaxillaris
PASSERIFORMES	Fringillidae	Hemignathus flavus
PASSERIFORMES	Fringillidae	Hemignathus kauaiensis
PASSERIFORMES	Fringillidae	Hemignathus lucidus
PASSERIFORMES	Fringillidae	Hemignathus munroi
PASSERIFORMES	Fringillidae	Hemignathus parvus
PASSERIFORMES	Tyrannidae	Hemitriccus furcatus
PASSERIFORMES	Tyrannidae	Hemitriccus kaempferi
PASSERIFORMES	Thamnophilidae	Herpsilochmus pectoralis
PASSERIFORMES	Thamnophilidae	Herpsilochmus pileatus
PASSERIFORMES	Monarchidae	Hypothymis coelestis
PASSERIFORMES	Icteridae	Icterus bonana
PASSERIFORMES	Icteridae	Icterus northropi
PASSERIFORMES	Pycnonotidae	Ixos siquijorensis
PASSERIFORMES	Sylviidae	Locustella pleskei
PASSERIFORMES	Fringillidae	Loxops coccineus
PASSERIFORMES	Meliphagidae	Manorina melanotis
PASSERIFORMES	Emberizidae	Melanospiza richardsoni
PASSERIFORMES	Rhinocryptidae	Merulaxis stresemanni
PASSERIFORMES	Timaliidae	Micromacronus leytensis
PASSERIFORMES	Acanthizidae	Mohoua ochrocephala
PASSERIFORMES	Muscicapidae	Muscicapa randi
PASSERIFORMES	Turdidae	Myadestes lanaiensis
PASSERIFORMES	Turdidae	Myadestes obscurus
PASSERIFORMES	Thamnophilidae	Myrmeciza ruficauda
PASSERIFORMES	Thamnophilidae	Myrmotherula fluminensis
PASSERIFORMES	Thamnophilidae	Myrmotherula minor
PASSERIFORMES	Thamnophilidae	Myrmotherula urosticta
PASSERIFORMES	Pipridae	Neopelma aurifrons
PASSERIFORMES	Tyrannidae	Onychorhynchus swainsoni
PASSERIFORMES	Fringillidae	Oreomystis bairdi
PASSERIFORMES	Oriolidae	Oriolus isabellae
PASSERIFORMES	Emberizidae	Oryzoborus maximiliani
PASSERIFORMES	Pachycephalidae	Pachycephala rufogularis
PASSERIFORMES	Estrildidae	Padda oryzivora
PASSERIFORMES	Fringillidae	Palmeria dolei
PASSERIFORMES	Timaliidae	Paradoxornis flavirostris
PASSERIFORMES	Pardalotidae	Pardalotus quadragintus
PASSERIFORMES	Fringillidae	Paroreomyza maculata
PASSERIFORMES	Fringillidae	Paroreomyza montana

PASSERIFORMES	Paridae	Parus nuchalis
PASSERIFORMES	Timaliidae	Pellorneum palustre
PASSERIFORMES	Tyrannidae	Phylloscartes kronei
PASSERIFORMES	Sylviidae	Phylloscopus hainanus
PASSERIFORMES	Sylviidae	Phylloscopus ijimae
PASSERIFORMES	Cotingidae	Phytotoma raimondii
PASSERIFORMES	Pittidae	Pitta nympha
PASSERIFORMES	Pittidae	Pitta steerii
PASSERIFORMES	Tyrannidae	Platyrinchus leucoryphus
PASSERIFORMES	Ploceidae	Ploceus megarhynchus
PASSERIFORMES	Monarchidae	Pomarea mendozae
PASSERIFORMES	Emberizidae	Poospiza cinerea
PASSERIFORMES	Cisticolidae	Prinia cinereocapilla
PASSERIFORMES	Cotingidae	Procnias nudicollis
PASSERIFORMES	Fringillidae	Psittirostra psittacea
PASSERIFORMES	Pycnonotidae	Pycnonotus taivanus
PASSERIFORMES	Pycnonotidae	Pycnonotus xantholaemus
PASSERIFORMES	Thamnophilidae	Pyriglena atra
PASSERIFORMES	Mimidae	Ramphocinclus brachyurus
PASSERIFORMES	Muscicapidae	Rhinomyias albigularis
PASSERIFORMES	Muscicapidae	Rhinomyias brunneatus
PASSERIFORMES	Timaliidae	Robsonius rabori
PASSERIFORMES	Muscicapidae	Saxicola macrorhynchus
PASSERIFORMES	Fringillidae	Serinus syriacus
PASSERIFORMES	Emberizidae	Sporophila cinnamomea
PASSERIFORMES	Emberizidae	Sporophila falcirostris
PASSERIFORMES	Emberizidae	Sporophila frontalis
PASSERIFORMES	Emberizidae	Sporophila palustris
PASSERIFORMES	Maluridae	Stipiturus mallee
PASSERIFORMES	Icteridae	Sturnella defilippii
PASSERIFORMES	Sturnidae	Sturnus albofrontatus
PASSERIFORMES	Sturnidae	Sturnus melanopterus
PASSERIFORMES	Thamnophilidae	Stymphalornis acutirostris
PASSERIFORMES	Hirundinidae	Tachycineta cyaneoviridis
PASSERIFORMES	Thraupidae	Tangara fastuosa
PASSERIFORMES	Thraupidae	Tangara peruviana
PASSERIFORMES	Furnariidae	Thripophaga macroura
PASSERIFORMES	Cotingidae	Tijuca condita
PASSERIFORMES	Emberizidae	Torreornis inexpectata
PASSERIFORMES	Mimidae	Toxostoma bendirei
PASSERIFORMES	Troglodytidae	Troglodytes cobbi
PASSERIFORMES	Timaliidae	Turdoides longirostris
PASSERIFORMES	Turdidae	Turdus celaenops
PASSERIFORMES	Turdidae	Turdus feae
PASSERIFORMES	Turdidae	Turdus lherminieri
PASSERIFORMES	Turdidae	Turdus menachensis

PASSERIFORMES	Tyrannidae	Tyrannus cubensis
PASSERIFORMES	Corvidae	Urocissa ornata
PASSERIFORMES	Parulidae	Vermivora bachmanii
PASSERIFORMES	Fringillidae	Vestiaria coccinea
PASSERIFORMES	Vireonidae	Vireo atricapilla
PASSERIFORMES	Meliphagidae	Xanthomyza phrygia
PASSERIFORMES	Icteridae	Xanthopsar flavus
PASSERIFORMES	Cotingidae	Xipholena atropurpurea
PASSERIFORMES	Tyrannidae	Xolmis dominicanus
PASSERIFORMES	Turdidae	Zoothera cinerea
PASSERIFORMES	Turdidae	Zoothera guttata
PASSERIFORMES	Zosteropidae	Zosterops samoensis
PASSERIFORMES	Hirundinidae	Progne murphyi
PELECANIFORMES	Ardeidae	Egretta eulophotes
PELECANIFORMES	Threskiornithidae	Geronticus eremita
PELECANIFORMES	Ardeidae	Gorsachius goisagi
PELECANIFORMES	Ardeidae	Gorsachius magnificus
PELECANIFORMES	Pelecanidae	Pelecanus crispus
PELECANIFORMES	Threskiornithidae	Platalea minor
PICIFORMES	Capitonidae	Capito wallacei
PICIFORMES	Picidae	Celeus tinnunculus
PICIFORMES	Picidae	Chrysocolaptes xanthocephalus
PICIFORMES	Picidae	Colaptes fernandinae
PICIFORMES	Picidae	Dendrocopos noguchii
PODICIPEDIFORMES	Podicipedidae	Poliocephalus rufopectus
SPHENISCIFORMES	Spheniscidae	Eudyptes pachyrhynchus

141 **Supplementary Table 8 | Response of mammals to climate change by taxonomic order.**

Orders	Negative	Positive	Unchanged	Mixed	No. species coded as threatened by climate change on 2014 IUCN Red List
Carnivora	5 (42%)	5 (42%)	1 (4%)	1 (4%)	1
Cetartiodactyla	12 (67%)	2 (11%)	3 (17%)	1 (5%)	2
Dasyuromorphia	2 (100%)	0	0	0	0
Didelphimorphia	0	1 (100%)	0	0	NA
Diprotodontia	1 (100%)	0	0	0	0
Eulipotyphla	0	1 (9%)	7 (64%)	3 (27%)	NA
Lagomorpha	2 (50%)	0	2 (50%)	0	2
Perissodactyla	3 (75%)	0	1 (25%)	0	1
Primates	4 (100%)	0	0	0	0
Proboscidea	2 (100%)	0	0	0	1
Rodentia	15 (25%)	22 (30%)	15 (25%)	9 (20%)	1
Total	46 (38%)	31 (26%)	29 (24%)	14 (12%)	8

142 Observed response of mammal species to climate change, including the percentage of species with a given
143 response in each taxonomic order. Also number of species with a recorded negative response for which
144 'climate change and severe weather' is already coded as a threat in the IUCN Red List. Mean number of
145 studies/populations per species=1.5, sd=1.06.

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147 **Supplementary Table 9 | Response of birds to climate change by taxonomic order.**

Orders	Negative	Positive	Unchanged	Mixed	No. species coded as threatened by climate change on 2014 IUCN Red List
Accipitriformes	4 (17%)	14 (61%)	3 (13%)	2 (9%)	0
Anseriformes	6 (18%)	12 (36%)	11 (33%)	4 (12%)	2
Bucerotiformes	1 (100%)	0	0	0	0
Caprimulgiformes	3 (13%)	16 (70%)	4 (17%)	0	0
Charadriiformes	23 (32%)	26 (37%)	16 (26%)	6 (8%)	7
Ciconiiformes	0	2 (100%)	0	0	NA
Columbiformes	0	5 (71%)	1 (14%)	1 (14%)	NA
Coraciiformes	1 (14%)	2 (29%)	3 (43%)	1 (14%)	0
Cuculiformes	2 (29%)	3 (43%)	2 (29%)	0	1
Falconiformes	3 (50%)	2 (33%)	1 (17%)	0	0
Galliformes	5 (56%)	4 (44%)	0	0	1
Gaviiformes	0	1 (50%)	0	1 (50%)	NA
Gruiformes	0	7 (78%)	2 (22%)	0	NA
Passeriformes	61 (19%)	215 (67%)	24 (7%)	21 (7%)	5
Pelecaniformes	2 (20%)	4 (40%)	4 (40%)	0	1
Piciformes	3 (16%)	12 (63%)	4 (21%)	0	0
Podicipediformes	1 (14%)	1 (14%)	3 (43%)	2 (29%)	0
Procellariiformes	1 (17%)	3 (50%)	1 (17%)	1 (17%)	1
Psittaciformes	0	0	1 (100%)	0	NA
Sphenisciformes	2 (40%)	0	3 (60%)	0	2
Strigiformes	1 (33%)	0	2 (67%)	0	0
Suliformes	0	1 (50%)	1 (50%)	0	NA
Total	119	332	80	38	20

148 Observed response of bird species to climate change, including the percentage of species with a given
149 response in each taxonomic order. Also number of species with a recorded negative response for which
150 'climate change and severe weather' is already coded as a threat in the IUCN Red List. Mean number of
151 studies/populations per species=3.5, sd=4.5.

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Supplementary Table 10 | Numeric predictor variables and orders for which our predictions on threatened species are most reliable for mammals.

	Hab	Diet	BM	WA	Disp	GL	LS	LY	Rang e	T_ma x	T_sea s	Alt_ran	Alt_mi n	Prec_sea s	MTD	MP D	SDT D	SDP D
Artiodactyla	1	1	0	1	0	0	1	1	0	1	0	0	1	0	0	0	0	0
Carnivora	1	1	1	1	1	1	0	1	0	1	0	0	1	0	0	0	0	0
Dasyuromorphia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Didelphimorphia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Diprotodontia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Eulipotyphla	0	1	0	1	0	1	0	0	0	1	0	1	0	1	0	0	0	0
Lagomorpha	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	0	1
Perissodactyla	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Primates	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
Proboscidea	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Rodentia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tot	9	10	8	10	8	10	8	8	6	10	6	8	10	8	7	7	5	7
%	82	91	73	91	73	91	73	73	55	91	55	73	91	73	64	64	45	64

156 A 1 in a cell corresponds to an intrinsic trait/extrinsic factor whose distributions in observed and threatened species did not differ significantly according to the
157 results of Kolmogorov-Smirnov tests with $\alpha=0.05$ (Hab, Habitat categories; BM, body mass; WA, weaning age; Disp, dispersal; GL, generation length; LS, litter
158 size; LY, litters per year; MTD, Median Temperature Difference; MPD, Median Precipitation Difference; SDTD, Standard Deviation of Median Temperature
159 Difference; SDPD, Standard Deviation of Median Precipitation Difference). Cells in red refer to intrinsic traits, while cells in orange to extrinsic factors.

160

Supplementary Table 11 | Numeric intrinsic and climatic predictor variables and orders for which our predictions on threatened species are most reliable for birds.

Order	Habitat	Diet	GL	BM	MCS	MTD_br	MPD_br	SDTD_br	SDPD_br	MTD_nb	MPD_nb	SDTD_nb	SDPD_nbr
Accipitr.	0	1	0	0	0	0	0	0	0	1	0	0	1
Anser.	0	1	1	1	1	0	0	0	1	1	0	0	0
Bucerot.	1	1	1	1	1	1	1	1	1	1	1	1	1
Caprimulg.	0	1	1	1	1	0	0	0	0	0	0	0	0
Charadri.	0	1	1	1	1	1	0	0	0	0	1	0	0
Ciconi.	1	1	1	1	1	1	1	1	1	1	1	1	1
Columb.	0	1	1	1	0	0	0	0	1	0	0	0	1
Coraci.	0	1	1	1	0	0	0	0	1	1	0	0	1
Cucul.	0	1	1	1	1	1	1	0	1	1	1	0	1
Falcon.	0	1	1	1	1	1	1	1	1	1	1	1	1
Gall.	0	0	1	1	0	0	0	0	0	0	0	0	1
Gru.	1	1	1	1	0	0	0	0	1	1	0	0	1
Passer.	0	1	0	0	0	0	0	0	0	0	0	0	0
Pelecan.	1	1	1	1	1	1	1	0	0	1	1	0	0
Pic.	0	1	0	1	0	0	0	0	1	1	0	0	1
Podiciped.	1	1	1	1	1	1	1	0	1	1	1	0	1
Procellar.	0	1	1	1	1	0	0	1	1	1	1	1	1
Psittacc.	1	1	1	1	1	1	1	1	1	1	1	1	1
Sphenisc.	1	1	1	1	1	1	1	1	1	1	1	1	1
Strig.	0	1	1	1	0	1	1	0	1	1	1	0	1
Sul.	1	1	1	1	1	1	1	1	0	1	1	1	0
Tot	8	20	18	19	13	11	10	7	14	16	12	7	15
%	38	95	86	90	62	52	48	33	67	76	57	33	71

Values of 1 corresponds to a predictor variable whose distributions among observed and threatened species did not differ significantly according to the results of Kolmogorov-Smirnov tests with $\alpha=0.05$. Cells in red refer to intrinsic traits, cells in blue to extrinsic factors within the breeding range (GL, generation length; BM, body mass; MTD, Median Temperature Difference; MPD, Median Precipitation Difference; SDTD, Standard Deviation of Median Temperature Difference; SDPD, Standard Deviation of Median Precipitation Difference). Names of the orders are abbreviated by removing the suffix -(i)formes (e.g., Accipitr. = Accipitridae). Br and nb stands for breeding and non-breeding ranges, respectively.

Order	T_s_br	T_m_br	P_s_br	Alt_r_br	Alt_m_br	Range_br	T_s_nb	T_m_nb	P_s_nb	Alt_m_nb	Alt_r_nb	Range_nb
Accipitr.	0	0	0	0	1	0	0	0	0	0	0	0
Anser.	1	0	1	0	0	0	0	0	0	0	0	0
Bucerot.	1	1	1	1	1	1	1	1	1	1	1	1
Caprimulg.	0	0	1	0	0	0	0	0	1	1	0	0
Charadri.	1	0	0	0	0	0	0	0	0	1	0	0
Ciconi.	1	1	1	1	1	1	1	1	1	1	1	1
Columb.	0	0	0	0	0	0	0	0	0	0	0	0
Coraci.	0	0	1	0	0	0	0	0	0	1	0	0
Cucul.	1	1	1	1	1	0	0	0	1	1	1	0
Falcon.	1	0	1	1	1	1	1	1	1	1	1	1
Gall.	0	1	0	0	0	0	0	0	0	0	0	0
Gru.	0	0	1	0	0	0	0	0	0	1	0	0
Passer.	0	0	0	0	0	0	0	0	0	0	0	0
Pelecan.	0	0	1	0	1	0	0	0	0	1	0	0
Pic.	0	1	0	0	1	0	0	0	0	1	0	0
Podiciped.	1	1	1	0	1	0	0	1	1	1	1	0
Procellar.	1	1	0	0	1	0	1	0	1	1	1	0
Psittac.	1	1	1	1	1	1	1	1	1	1	1	1
Sphenisc.	1	0	1	1	1	0	1	1	1	1	1	0
Strig.	0	1	1	1	1	0	0	1	1	1	1	0
Sul.	1	1	1	1	1	0	0	1	1	1	1	0
Tot	11	10	14	8	13	4	6	8	11	16	10	4
%	52	48	67	38	62	19	29	38	52	76	48	19

169 Values of 1 corresponds to a predictor variable whose distributions among observed and threatened species did not differ significantly according to the results of
170 Kolmogorov-Smirnov tests with $\alpha=0.05$. (T_s, temperature seasonality; T_m, temperature maximum; P_s, precipitation seasonality; Alt_r, altitudinal range;
171 Alt_m, minimum altitude). Names of the orders are abbreviated by removing the suffix -(i)formes (e.g., Accipitr. = Accipitriformes). Br and nb stands for
172 breeding and non-breeding ranges, respectively.

174 **Supplementary Table 13 | Results of Chi-squared tests for overdispersion.**

Model	P-value
Mammals	0.91
Birds (breeding areas)	1
Birds (non-breeding areas)	1

175 P-values close to 1 indicate lack of overdispersion.

176

177 **Supplementary Table 14 Results of a binomial model having "negative" and "non-negative" classes**
178 **for the response variable of mammals.**

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-1.82E+00	1.17E+00	-1.56E+00	0.11765
Prec_range	2.42E-03	1.07E-03	2.26E+00	0.024*
FossorialYES	1.60E+00	8.42E-01	1.91E+00	0.05667.
Alt_min	3.66E-05	4.60E-04	7.95E-02	0.93663
OrderCETARTIODACTYLA	-7.11E-01	8.89E-01	-8.00E-01	0.42366
OrderDASYUROMORPHIA	-1.44E+01	9.92E-07	-1.45E+07	<2.00E-16***
OrderDIDELPHIMORPHIA	1.35E+01	9.26E-07	1.46E+07	<2.00E-16***
OrderDIPROTODONTIA	-1.84E+01	NA	NA	NA
OrderEULIPOTYPHLA	2.53E+00	1.26E+00	2.01E+00	0.045*
OrderLAGOMORPHA	1.88E-01	1.24E+00	1.52E-01	0.88
OrderPERISSODACTYLA	-1.81E+00	1.56E+00	-1.16E+00	0.245
OrderPRIMATES	-1.92E+01	0.00E+00	-Inf	<2.00E-16***
OrderPROBOSCIDEA	-2.68E+01	0.00E+00	-Inf	<2.00E-16***
OrderRODENTIA	9.46E-01	7.10E-01	1.33E+00	0.18
mean_T_diff	-8.20E-01	1.05E+00	-7.81E-01	0.43
Diet	1.26E-01	1.06E-01	1.20E+00	0.23

179 Coefficient estimates are similar to those obtained by applying the multinomial model, but the AUC differs
180 (here 0.85).

181 **Supplementary Table 15 Results of a binomial model having "negative" and "non-negative" classes**
182 **for the response variable of birds (breeding areas).**

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	3.32E-01	1.05E-01	3.15E+00	0.0016**
mean_t_diff_br	-3.44E-01	4.23E-01	-8.13E-01	0.416032
Alt_min_br	-7.85E-04	7.66E-04	-1.03E+00	0.305373
Mean_clutch_size	6.89E-02	8.15E-02	8.46E-01	0.397497
Habitat_cat	6.72E-02	3.43E-02	1.96E+00	0.050004
OrderANSERIFORMES	-3.38E-01	5.51E-01	-6.13E-01	0.539739
OrderBUCEROTIFORMES	-2.24E+01	2.12E-16	-1.06E+17	<2.20E-16***
OrderCAPRIMULGIFORMES	5.67E-01	6.63E-01	8.55E-01	0.392465
OrderCHARADRIIFORMES	-1.02E+00	3.54E-01	-2.87E+00	0.004054
OrderCICONIIFORMES	1.59E+01	3.98E-16	4.00E+16	<2.20E-16***
OrderCOLUMBIFORMES	1.57E+01	NA	NA	NA
OrderCORACIIFORMES	1.61E-01	1.03E+00	1.57E-01	0.875645
OrderCUCULIFORMES	-2.11E-01	8.55E-01	-2.47E-01	0.805185
OrderFALCONIFORMES	-1.34E+00	8.21E-01	-1.63E+00	0.103377
OrderGALLIFORMES	-2.18E+00	8.69E-01	-2.50E+00	0.012252*
OrderGAVIIFORMES	-1.50E+00	1.30E+00	-1.15E+00	0.251819
OrderGRUIFORMES	1.60E+01	NA	NA	NA
OrderPASSERIFORMES	-9.35E-02	2.72E-01	-3.44E-01	0.731254
OrderPELECANIFORMES	2.65E-01	7.98E-01	3.32E-01	0.740106
OrderPICIFORMES	1.39E-01	6.49E-01	2.14E-01	0.83091
OrderPODICIPEDIFORMES	6.08E-01	1.04E+00	5.82E-01	0.560568
OrderPROCELLARIIFORMES	-8.77E-01	9.04E-01	-9.70E-01	0.33199
OrderPSITTACIFORMES	1.17E+01	3.34E-07	3.51E+07	<2.20E-16***
OrderSPHENISCIFORMES	-2.36E+01	0.00E+00	-Inf	<2.20E-16***
OrderSTRIGIFORMES	-1.14E+00	1.16E+00	-9.86E-01	0.324291
OrderSULIFORMES	1.45E+01	0.00E+00	Inf	<2.20E-16***
T_max_br	1.67E-03	1.94E-02	8.57E-02	0.931688
T_range_br	2.20E-01	7.07E-02	3.11E+00	0.001895**
T_max_br:T_range_br	-6.19E-03	2.23E-03	-2.78E+00	0.005437**

183 Coefficient estimates are similar to those obtained by applying the multinomial model, but the AUC differs
184 (here 0.64).

185 **Supplementary Table 16 Results of a binomial model having "negative" and "non-negative" classes**
186 **for the response variable of birds (non-breeding areas).**

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-1.22E+00	1.19E-01	-1.03E+01	<2.20E-16***
mean_t_diff_nb	-2.77E-01	8.19E-02	-3.38E+00	0.000726***
Gen_length	1.70E-01	3.56E-02	4.76E+00	1.90E-06***
Alt_range_nb	1.68E-04	1.43E-04	1.18E+00	0.237499
Alt_min_nb	-1.35E-03	7.03E-04	-1.92E+00	0.05447.
Dispersal_distanceL	-1.30E-01	3.01E-01	-4.33E-01	0.665384
Habitat_cat	4.13E-02	3.30E-02	1.25E+00	0.211185
T_range_nb	-5.11E-03	1.09E-02	-4.69E-01	0.639451
Prec_range_nb	6.08E-04	3.83E-04	1.59E+00	0.112665
Mean_clutch_size	1.50E-01	5.65E-02	2.65E+00	0.007989**
OrderANSERIFORMES	-3.66E-01	9.22E-02	-3.97E+00	7.29E-05***
OrderBUCEROTIFORMES	-3.00E+02	0.00E+00	-Inf	<2.20E-16***
OrderCAPRIMULGIFORMES	1.46E+00	1.03E-01	1.42E+01	<2.20E-16***
OrderCHARADRIIFORMES	-5.67E-01	3.15E-01	-1.80E+00	0.072205.
OrderCICONIIFORMES	1.64E+02	NA	NA	NA
OrderCOLUMBIFORMES	2.61E+02	2.52E-30	1.04E+32	<2.20E-16***
OrderCORACIIFORMES	7.68E-01	1.35E-02	5.68E+01	<2.20E-16***
OrderCUCULIFORMES	5.30E-01	4.52E-02	1.17E+01	<2.20E-16***
OrderFALCONIFORMES	-6.16E-01	2.90E-02	-2.12E+01	<2.20E-16***
OrderGALLIFORMES	-1.58E+00	2.25E-02	-7.03E+01	<2.20E-16***
OrderGAVIIFORMES	-6.12E-01	1.50E-02	-4.07E+01	<2.20E-16***
OrderGRUIFORMES	1.83E+02	1.77E-39	1.03E+41	<2.20E-16***
OrderPASSERIFORMES	7.88E-01	2.15E-01	3.66E+00	0.00025.
OrderPELECANIFORMES	2.88E-01	2.78E-02	1.03E+01	<2.20E-16***
OrderPICIFORMES	1.02E+00	6.88E-02	1.48E+01	<2.20E-16***
OrderPODICIPEDIFORMES	9.94E-01	1.54E-02	6.46E+01	<2.20E-16***
OrderPROCELLARIIFORMES	-2.11E+00	4.44E-02	-4.75E+01	<2.20E-16***
OrderPSITTACIFORMES	2.48E+02	0.00E+00	Inf	<2.20E-16***
OrderSPHENISCIFORMES	-3.66E+02	0.00E+00	-Inf	<2.20E-16***
OrderSTRIGIFORMES	-3.67E-01	8.45E-03	-4.34E+01	<2.20E-16***
OrderSULIFORMES	2.27E+02	0.00E+00	Inf	<2.20E-16***

187 Coefficient estimates are similar to those obtained by applying the multinomial model, but the AUC differs
188 (here 0.64).
189

190 **Supplementary Table 17 Number of studies/populations per mammal species. For mammals, 73% of**
 191 **the observations were included in the 1-study category, 16% had 2 studies, and the remaining 11% of**
 192 **the observations was split into other 5 categories.**

Species	Number of studies/populations
Aepyceros melampus	1
Ailuropoda melanoleuca	1
Alces alces	2
Alopex lagopus	1
Alouatta seniculus	1
Antechinus agilis	1
Antechinus swainsonii	1
Antilocapra americana	1
Apodemus speciosus	1
Ateles geoffroyi	1
Blarina brevicauda	1
Brachylagus idahoensis	1
Brachyteles arachnoides	1
Capra ibex	1
Capreolus capreolus	1
Cervus elaphus	3
Chaetodipus californicus	1
Condylura cristata	1
Connochaetes taurinus	2
Damaliscus lunatus	1
Dicerorhinus sumatrensis	1
Dicrostonyx groenlandicus	1
Didelphis virginiana	1
Dipodomys heermanni	1
Dipodomys merriami	2
Dipodomys ordii	1
Elephas maximus	1
Equus burchelli	1
Giraffa camelopardalis	1
Glaucomys sabrinus	3
Glaucomys volans	2
Glis glis	1
Gulo gulo	1
Hemibelideus lemuroides	1
Hippotragus equinus	1
Hippotragus niger	1
Kobus ellipsiprymnus	1
Lagothrix lagotricha	1
Lemmus lemmus	1
Lepus americanus	1
Loxodonta africana	1
Lutra lutra	1
Lynx canadensis	1
Marmota flaviventris	5
Marmota marmota	1
Marmota monax	1
Martes americana	1
Martes foina	1
Meles meles	1
Microtus agrestis	1
Microtus californicus	1

<i>Microtus chrotorrhinus</i>	1
<i>Microtus longicaudus</i>	2
<i>Microtus montanus</i>	2
<i>Microtus oeconomus</i>	1
<i>Microtus pennsylvanicus</i>	1
<i>Mus musculus</i>	1
<i>Mustela erminea</i>	2
<i>Myodes gapperi</i>	2
<i>Myodes glareolus</i>	1
<i>Myodes rufocanus</i>	1
<i>Myodes smithii</i>	1
<i>Napaeozapus insignis</i>	2
<i>Neotoma albigula</i>	2
<i>Neotoma cinerea</i>	2
<i>Neotoma lepida</i>	1
<i>Neotoma macrotis</i>	1
<i>Ochotona collaris</i>	1
<i>Ochotona princeps</i>	3
<i>Ovibos moschatus</i>	1
<i>Ovis canadensis</i>	1
<i>Perognathus flavescens</i>	1
<i>Perognathus parvus</i>	1
<i>Peromyscus boylii</i>	1
<i>Peromyscus leucopus</i>	2
<i>Peromyscus maniculatus</i>	6
<i>Peromyscus truei</i>	3
<i>Phacochoerus africanus</i>	1
<i>Phenacomys intermedius</i>	1
<i>Procyon lotor</i>	1
<i>Rangifer tarandus</i>	4
<i>Rattus fuscipes</i>	1
<i>Rattus lutreolus</i>	1
<i>Reithrodontomys megalotis</i>	2
<i>Rhinoceros sondaicus</i>	1
<i>Rhinoceros unicornis</i>	1
<i>Sciurus carolinensis</i>	1
<i>Sorex arcticus</i>	1
<i>Sorex cinereus</i>	2
<i>Sorex hoyi</i>	1
<i>Sorex lyelli</i>	1
<i>Sorex monticolus</i>	2
<i>Sorex ornatus</i>	1
<i>Sorex palustris</i>	3
<i>Sorex trowbridgii</i>	1
<i>Sorex vagrans</i>	1
<i>Spermophilus beecheyi</i>	2
<i>Spermophilus beldingi</i>	4
<i>Spermophilus columbianus</i>	1
<i>Spermophilus franklinii</i>	1
<i>Spermophilus lateralis</i>	3
<i>Spermophilus parryi</i>	1
<i>Synaptomys cooperi</i>	1
<i>Tamias alpinus</i>	2
<i>Tamias minimus</i>	3
<i>Tamias quadrimaculatus</i>	1
<i>Tamias senex</i>	1

Tamias speciosus	1
Tamias striatus	2
Tamias umbrinus	1
Tamiasciurus douglasii	1
Tamiasciurus hudsonicus	3
Taxidea taxus	1
Thomomys bottae	1
Thomomys monticola	1
Tragelaphus oryx	1
Tragelaphus strepsiceros	1
Ursus maritimus	8
Zapus hudsonius	1
Zapus princeps	2

194 **Supplementary Table 18 Number of studies/populations per bird species. For birds, 44% of the**
 195 **observations were included in the 1-study category, 16% had 2 studies, and more than 14 classes had**
 196 **less than 10% of the observations.**

Species	Number of studies/populations
Parus major	44
Ficedula hypoleuca	39
Hirundo rustica	29
Parus caeruleus	29
Sylvia borin	19
Phylloscopus collybita	17
Apus apus	16
Phoenicurus phoenicurus	16
Sylvia communis	16
Sylvia atricapilla	16
Phylloscopus trochilus	15
Saxicola rubetra	15
Cuculus canorus	14
Delichon urbicum	13
Muscicapa striata	13
Motacilla flava	12
Phylloscopus sibilatrix	12
Anthus trivialis	12
Carduelis cannabina	12
Riparia riparia	12
Acrocephalus schoenobaenus	11
Acrocephalus scirpaceus	11
Emberiza schoeniclus	11
Sturnus vulgaris	11
Sylvia curruca	11
Troglodytes troglodytes	11
Erithacus rubecula	10
Fringilla coelebs	10
Luscinia megarhynchos	10
Turdus philomelos	10
Anthus pratensis	10
Hippolais icterina	10
Catharus ustulatus	9
Lanius collurio	9
Locustella naevia	9
Prunella modularis	9
Serinus serinus	9
Turdus viscivorus	9
Oporornis philadelphia	9
Parkesia noveboracensis	9
Turdus merula	9
Motacilla alba	8
Oriolus oriolus	8
Actitis hypoleucos	8
Alauda arvensis	8
Hylocichla mustelina	8
Dendroica magnolia	8
Dendroica petechia	8
Wilsonia pusilla	8
Zonotrichia leucophrys	8
Vermivora ruficapilla	8

Numenius arquata	7
Pyrrhula pyrrhula	7
Vermivora cyanoptera	7
Carduelis chloris	7
Contopus virens	7
Jynx torquilla	7
Oenanthe oenanthe	7
Passer montanus	7
Passerina cyanea	7
Ciconia ciconia	7
Dumetella carolinensis	7
Ficedula albicollis	7
Geothlypis trichas	7
Phoenicurus ochruros	7
Vireo olivaceus	7
Vermivora peregrina	7
Acrocephalus palustris	6
Aegithalos caudatus	6
Dendroica coronata	6
Falco subbuteo	6
Sitta europaea	6
Vermivora chrysoptera	6
Emberiza citrinella	6
Empidonax minimus	6
Luscinia luscinia	6
Passer domesticus	6
Pheucticus ludovicianus	6
Setophaga ruticilla	6
Turdus pilaris	6
Turdus torquatus	6
Anser anser	6
Catharus guttatus	6
Columba palumbus	6
Dendroica caerulescens	6
Empidonax traillii	6
Molothrus ater	6
Passerella iliaca	6
Seiurus aurocapilla	6
Spatula clypeata	6
Turdus migratorius	6
Melospiza lincolni	6
Turdus iliacus	6
Acrocephalus arundinaceus	5
Coccothraustes coccothraustes	5
Corvus corone	5
Garrulus glandarius	5
Locustella luscinioides	5
Luscinia svecica	5
Oporornis formosus	5
Regulus regulus	5
Remiz pendulinus	5
Zonotrichia albicollis	5
Anas crecca	5
Carduelis spinus	5
Catharus fuscescens	5
Dendroica pensylvanica	5

Gallinago gallinago	5
Haematopus ostralegus	5
Mniotilta varia	5
Piranga olivacea	5
Tringa glareola	5
Tringa totanus	5
Vanellus vanellus	5
Dendroica fusca	5
Icterus galbula	5
Lullula arborea	5
Melospiza melodia	5
Regulus calendula	5
Sylvia nisoria	5
Tachycineta bicolor	5
Toxostoma rufum	5
Wilsonia canadensis	5
Wilsonia citrina	5
Dendroica castanea	5
Empidonax flaviventris	5
Sterna hirundo	5
Aythya ferina	4
Bucephala clangula	4
Calidris pugnax	4
Carduelis carduelis	4
Corvus frugilegus	4
Coturnix coturnix	4
Locustella fluviatilis	4
Oporornis tolmiei	4
Parus ater	4
Parus palustris	4
Pica pica	4
Podiceps grisegena	4
Streptopelia turtur	4
Anas acuta	4
Aythya fuligula	4
Calidris alpina	4
Charadrius dubius	4
Dolichonyx oryzivorus	4
Emberiza hortulana	4
Empidonax virescens	4
Gavia arctica	4
Larus ridibundus	4
Podiceps cristatus	4
Progne subis	4
Scolopax rusticola	4
Upupa epops	4
Charadrius vociferus	4
Colaptes auratus	4
Dendroica palmarum	4
Junco hyemalis	4
Larus argentatus	4
Merops ornatus	4
Myiagra rubecula	4
Piranga ludoviciana	4
Polioptila caerulea	4
Scythrops novaehollandiae	4

Streptopelia decaocto	4
Thalasseus sandvicensis	4
Troglodytes aedon	4
Uria lomvia	4
Carpodacus purpureus	4
Icteria virens	4
Parkesia motacilla	4
Vireo griseus	4
Anas platyrhynchos	3
Arenaria interpres	3
Certhia brachydactyla	3
Columba oenas	3
Milvus migrans	3
Thryomanes bewickii	3
Carduelis pinus	3
Charadrius hiaticula	3
Corvus monedula	3
Empidonax alnorum	3
Melanitta fusca	3
Mergus merganser	3
Mergus serrator	3
Motacilla cinerea	3
Spatula querquedula	3
Sphyrapicus varius	3
Accipiter nisus	3
Agelaius phoeniceus	3
Buteo buteo	3
Buteo lagopus	3
Carduelis tristis	3
Certhia americana	3
Circus pygargus	3
Coracina tenuirostris	3
Dendroica virens	3
Eudynamis scolopaceus	3
Eurystomus orientalis	3
Fulica americana	3
Larus fuscus	3
Melospiza cinerea	3
Monarcha melanops	3
Myiarchus cinerascens	3
Myiarchus crinitus	3
Nycticorax nycticorax	3
Pandion haliaetus	3
Passerina amoena	3
Petrochelidon pyrrhonota	3
Phalacrocorax carbo	3
Pheucticus melanocephalus	3
Psittacus erythrorhynchos	3
Rhipidura rufifrons	3
Saxicola torquatus	3
Sayornis phoebe	3
Sialia sialis	3
Somateria mollissima	3
Spatula discors	3
Spizella pusilla	3
Tyrannus verticalis	3

Vireo gilvus	3
Aphelocoma californica	3
Dendroica tigrina	3
Fringilla montifringilla	3
Melospiza georgiana	3
Sayornis nigricans	3
Tringa nebularia	3
Caprimulgus europaeus	2
Ciconia nigra	2
Coccyzus erythrophthalmus	2
Contopus sordidulus	2
Crex crex	2
Dendroica occidentalis	2
Limosa limosa	2
Parus cristatus	2
Parus montanus	2
Phasianus colchicus	2
Picus viridis	2
Platalea leucorodia	2
Podiceps nigricollis	2
Porzana porzana	2
Acrocephalus paludicola	2
Anthus campestris	2
Anthus petrosus	2
Calidris canutus	2
Carduelis flammea	2
Clanga pomarina	2
Coccyzus americanus	2
Contopus cooperi	2
Coracias garrulus	2
Dendroica discolor	2
Fulmarus glacialis	2
Hippolais polyglotta	2
Limosa fedoa	2
Limosa lapponica	2
Pagodroma nivea	2
Passerina ciris	2
Perdix perdix	2
Spizella pallida	2
Tetrao urogallus	2
Tyrannus tyrannus	2
Accipiter striatus	2
Alcedo atthis	2
Archilochus colubris	2
Branta bernicla	2
Cacomantis variolosus	2
Carduelis psaltria	2
Carpodacus mexicanus	2
Cathartes aura	2
Catharus minimus	2
Chaetura pelagica	2
Chamaea fasciata	2
Cyanocitta stelleri	2
Cygnus olor	2
Dendrocopos major	2
Empidonax difficilis	2

<i>Empidonax hammondi</i>	2
<i>Ficedula parva</i>	2
<i>Gavia stellata</i>	2
<i>Heteroscenes pallidus</i>	2
<i>Hirundapus caudacutus</i>	2
<i>Hydrocoloeus minutus</i>	2
<i>Larus canus</i>	2
<i>Leuconotopicus borealis</i>	2
<i>Mareca strepera</i>	2
<i>Parula americana</i>	2
<i>Parus rufescens</i>	2
<i>Pernis apivorus</i>	2
<i>Pipilo erythrophthalmus</i>	2
<i>Pipilo maculatus</i>	2
<i>Porzana carolina</i>	2
<i>Rallus limicola</i>	2
<i>Regulus satrapa</i>	2
<i>Scolopax minor</i>	2
<i>Sialia mexicana</i>	2
<i>Sphyrapicus ruber</i>	2
<i>Stelgidopteryx serripennis</i>	2
<i>Stercorarius parasiticus</i>	2
<i>Sterna paradisaea</i>	2
<i>Sturnella neglecta</i>	2
<i>Sylvia melanocephala</i>	2
<i>Tachybaptus ruficollis</i>	2
<i>Tachycineta thalassina</i>	2
<i>Tachymarpis melba</i>	2
<i>Todiramphus sanctus</i>	2
<i>Tyrannus forficatus</i>	2
<i>Vireo flavifrons</i>	2
<i>Zenaida macroura</i>	2
<i>Zonotrichia atricapilla</i>	2
<i>Calypte anna</i>	2
<i>Parus atricapillus</i>	2
<i>Passerculus sandwichensis</i>	2
<i>Poocetes gramineus</i>	2
<i>Alectoris rufa</i>	1
<i>Aptenodytes forsteri</i>	1
<i>Aptenodytes patagonicus</i>	1
<i>Aulacorhynchus derbianus</i>	1
<i>Bartramia longicauda</i>	1
<i>Bonasa bonasia</i>	1
<i>Buteo swainsoni</i>	1
<i>Catharus dryas</i>	1
<i>Chlorospingus ophthalmicus</i>	1
<i>Circaetus gallicus</i>	1
<i>Conopophaga castaneiceps</i>	1
<i>Eudromias morinellus</i>	1
<i>Euphonia xanthogaster</i>	1
<i>Falco eleonora</i>	1
<i>Falco tinnunculus</i>	1
<i>Falco vespertinus</i>	1
<i>Gallinago media</i>	1
<i>Glareola pratincola</i>	1
<i>Glaucidium passerinum</i>	1

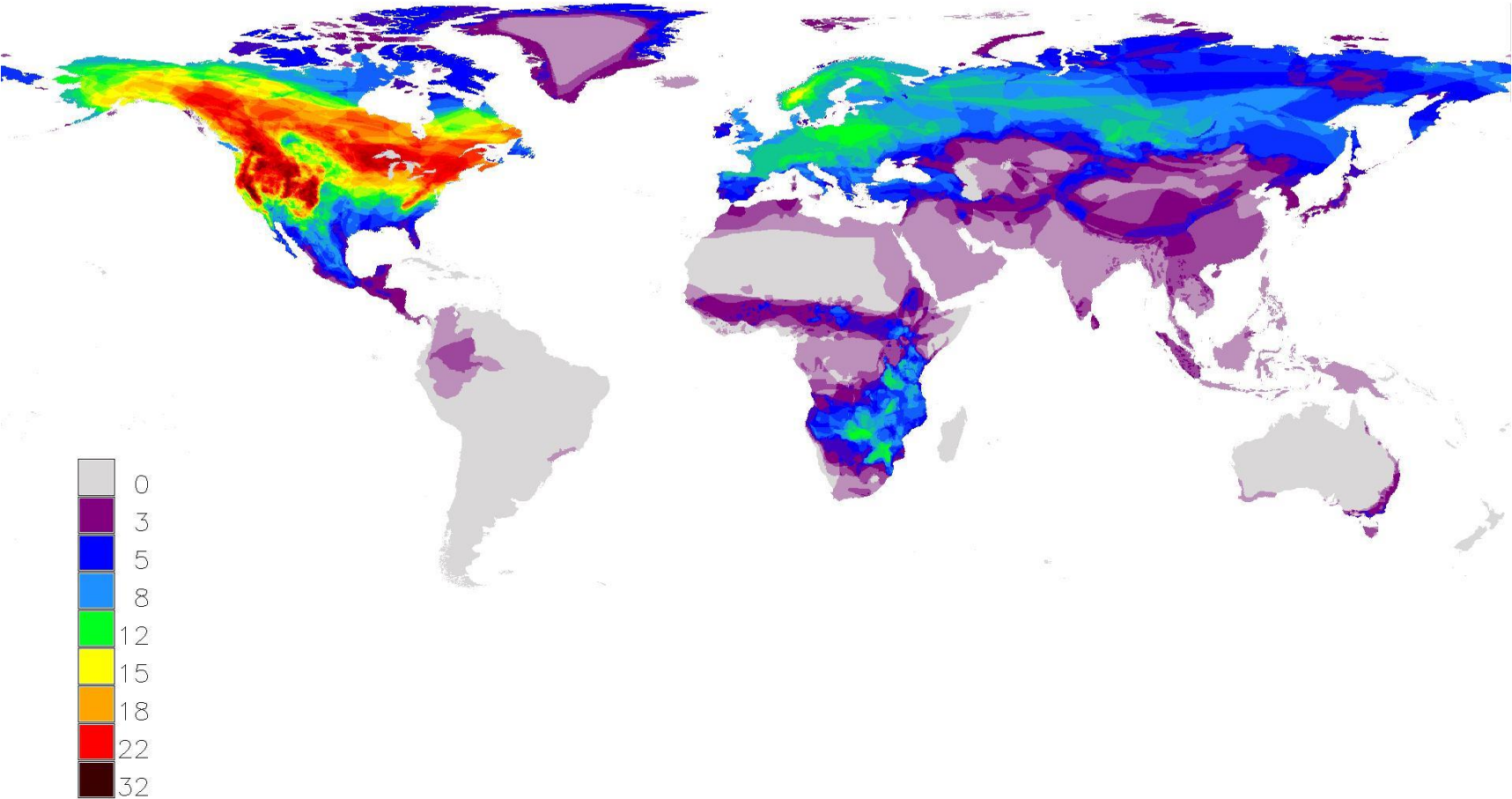
Haplophaedia aureliae	1
Heliodoxa leadbeateri	1
Hieraaetus pennatus	1
Ixobrychus minutus	1
Knipolegus poecilurus	1
Lanius minor	1
Larus novaehollandiae	1
Loxia curvirostra	1
Loxia leucoptera	1
Lyrurus tetrix	1
Miliaria calandra	1
Milvus milvus	1
Mionectes striaticollis	1
Monticola saxatilis	1
Numenius americanus	1
Numenius phaeopus	1
Ochthoeca pulchella	1
Oenanthe hispanica	1
Peucaea aestivalis	1
Philydor erythrocercum	1
Phylloscartes ventralis	1
Phylloscopus bonelli	1
Pipra pipra	1
Plegadis falcinellus	1
Pluvialis apricaria	1
Pluvialis squatarola	1
Spiza americana	1
Sternula albifrons	1
Trichothraupis melanops	1
Tringa stagnatilis	1
Xenopipo unicolor	1
Accipiter brevipes	1
Accipiter cooperii	1
Accipiter gentilis	1
Acrocephalus stentoreus	1
Adelomyia melanogenys	1
Aechmophorus occidentalis	1
Ammodramus henslowii	1
Ammodramus savannarum	1
Anser albifrons	1
Anser caerulescens	1
Anthus spragueii	1
Antigone canadensis	1
Aquila heliaca	1
Ardea cinerea	1
Ardea herodias	1
Ardeola raloides	1
Arremon brunneinucha	1
Asio flammeus	1
Aythya affinis	1
Aythya americana	1
Aythya valisineria	1
Baeolophus inornatus	1
Basileuterus tristriatus	1
Botaurus lentiginosus	1
Branta canadensis	1

Bucephala albeola	1
Buteo jamaicensis	1
Buteo platypterus	1
Calidris acuminata	1
Calidris ferruginea	1
Calidris melanotos	1
Calidris minutilla	1
Calidris pusilla	1
Callipepla californica	1
Campylorhamphus trochilirostris	1
Carduelis citrinella	1
Carduelis lawrencei	1
Carpodacus cassinii	1
Catharacta maccormicki	1
Catherpes mexicanus	1
Cercomacra nigrescens	1
Certhia familiaris	1
Charadrius bicinctus	1
Chlidonias niger	1
Chlorothraupis carmioli	1
Chondestes grammacus	1
Chordeiles minor	1
Cinclus cinclus	1
Cinclus mexicanus	1
Circus aeruginosus	1
Circus cyaneus	1
Coeligena coeligena	1
Columbina passerina	1
Corvus ossifragus	1
Cyanocitta cristata	1
Cygnus columbianus	1
Cygnus cygnus	1
Daption capense	1
Dendroica nigrescens	1
Dendroica striata	1
Dendroica townsendi	1
Diglossa caerulescens	1
Diglossa glauca	1
Doryfera ludovicae	1
Dryobates minor	1
Dryobates pubescens	1
Dryocopus martius	1
Dysithamnus mentalis	1
Emberiza cia	1
Emberiza cirrus	1
Empidonax oberholseri	1
Entomodestes leucotis	1
Eremophila alpestris	1
Euphagus carolinus	1
Euphagus cyanocephalus	1
Falco naumanni	1
Falco sparverius	1
Fulica atra	1
Fulmarus glacialis	1
Galerida cristata	1
Gallinago delicata	1

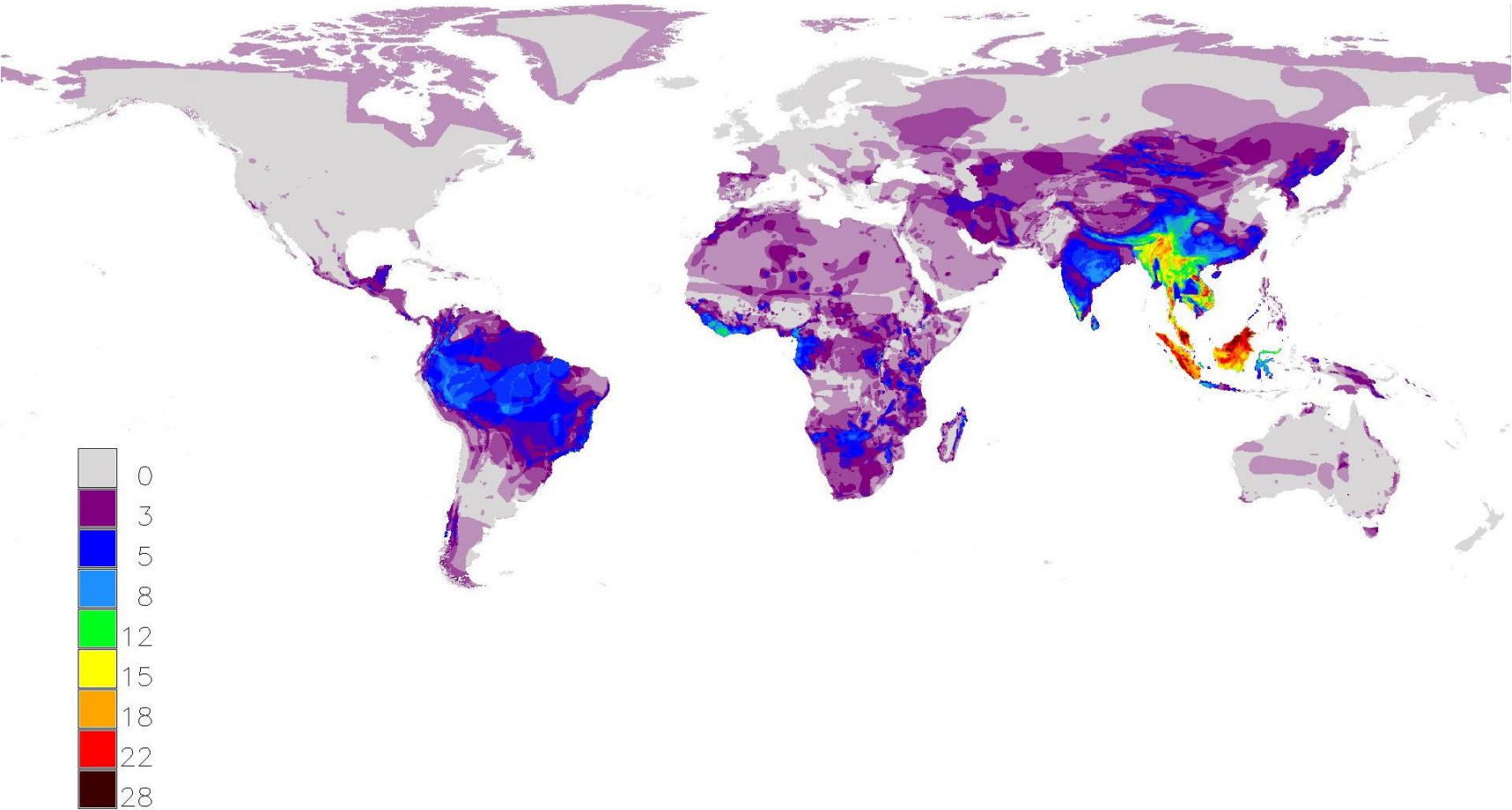
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Gallinula chloropus	1
Gerygone olivacea	1
Glyphorhynchus spirurus	1
Haliaeetus albicilla	1
Heliodoxa branickii	1
Henicorhina leucophrys	1
Hydroprogne caspia	1
Icterus bullockii	1
Iridosornis analis	1
Lalage tricolor	1
Lanius excubitor	1
Lanius senator	1
Larus delawarensis	1
Larus marinus	1
Larus pipixcan	1
Lathamus discolor	1
Lepidothrix coeruleocapilla	1
Leuconotopicus albolarvatus	1
Leuconotopicus villosus	1
Lophodytes cucullatus	1
Macronectes giganteus	1
Mareca americana	1
Megaceryle alcyon	1
Melanerpes formicivorus	1
Merops apiaster	1
Mionectes olivaceus	1
Myadestes townsendi	1
Myiagra cyanoleuca	1
Myiarchus cephalotes	1
Myiotriccus ornatus	1
Myrmotherula schisticolor	1
Nucifraga columbiana	1
Oceanites oceanicus	1
Ocreatus underwoodii	1
Oporornis agilis	1
Oxyura jamaicensis	1
Pachycephala rufiventris	1
Parus carolinensis	1
Parus gambeli	1
Pelecanus erythrorhynchos	1
Phalacrocorax auritus	1
Pipilo chlorurus	1
Pipra chloromeros	1
Pipreola riefferii	1
Piranga rubra	1
Platyrinchus mystaceus	1
Pluvialis fulva	1
Podiceps auritus	1
Podilymbus podiceps	1
Premnoplex brunnescens	1
Prinia gracilis	1
Pycnonotus goiavier	1
Quiscalus mexicanus	1
Quiscalus quiscula	1
Salpinctes obsoletus	1

Selasphorus rufus	1
Selasphorus sasin	1
Sialia currucoides	1
Sitta pygmaea	1
Sphyrapicus thyroideus	1
Spizella arborea	1
Spizella passerina	1
Steganopus tricolor	1
Sterna forsteri	1
Syndactyla rufosuperciliata	1
Syndactyla subalaris	1
Tadorna tadorna	1
Tangara vassorii	1
Thalassoica antarctica	1
Threnetes leucurus	1
Tringa erythropus	1
Tringa flavipes	1
Tringa melanoleuca	1
Tringa semipalmata	1
Tringa solitaria	1
Turdus serranus	1
Vermivora celata	1
Vireo cassinii	1
Vireo huttoni	1
Vireo philadelphicus	1
Vireo solitarius	1
Xanthocephalus xanthocephalus	1
Xiphorhynchus triangularis	1
Antrostomus carolinensis	1
Baeolophus bicolor	1
Basileuterus coronatus	1
Calidris temminckii	1
Cepphus grylle	1
Cercomacra serva	1
Clangula hyemalis	1
Columbina inca	1
Dendrocopos leucotos	1
Dendroica cerulea	1
Dendroica dominica	1
Dryobates nuttallii	1
Lepidothrix coronata	1
Limnothlypis swainsonii	1
Melanerpes aurifrons	1
Melanitta nigra	1
Mimus polyglottos	1
Nucifraga caryocatactes	1
Parus hudsonicus	1
Perisoreus canadensis	1
Phaethornis superciliosus	1
Plectrophenax nivalis	1
Quiscalus major	1
Thalurania furcata	1
Toxostoma redivivum	1
Tringa ochropus	1
Tyto alba	1
Zapornia parva	1

Parus major	44
Ficedula hypoleuca	39
Hirundo rustica	29
Parus caeruleus	29
Sylvia borin	19
Phylloscopus collybita	17
Apus apus	16
Phoenicurus phoenicurus	16
Sylvia communis	16
Sylvia atricapilla	16
Phylloscopus trochilus	15
Saxicola rubetra	15
Cuculus canorus	14
Delichon urbicum	13

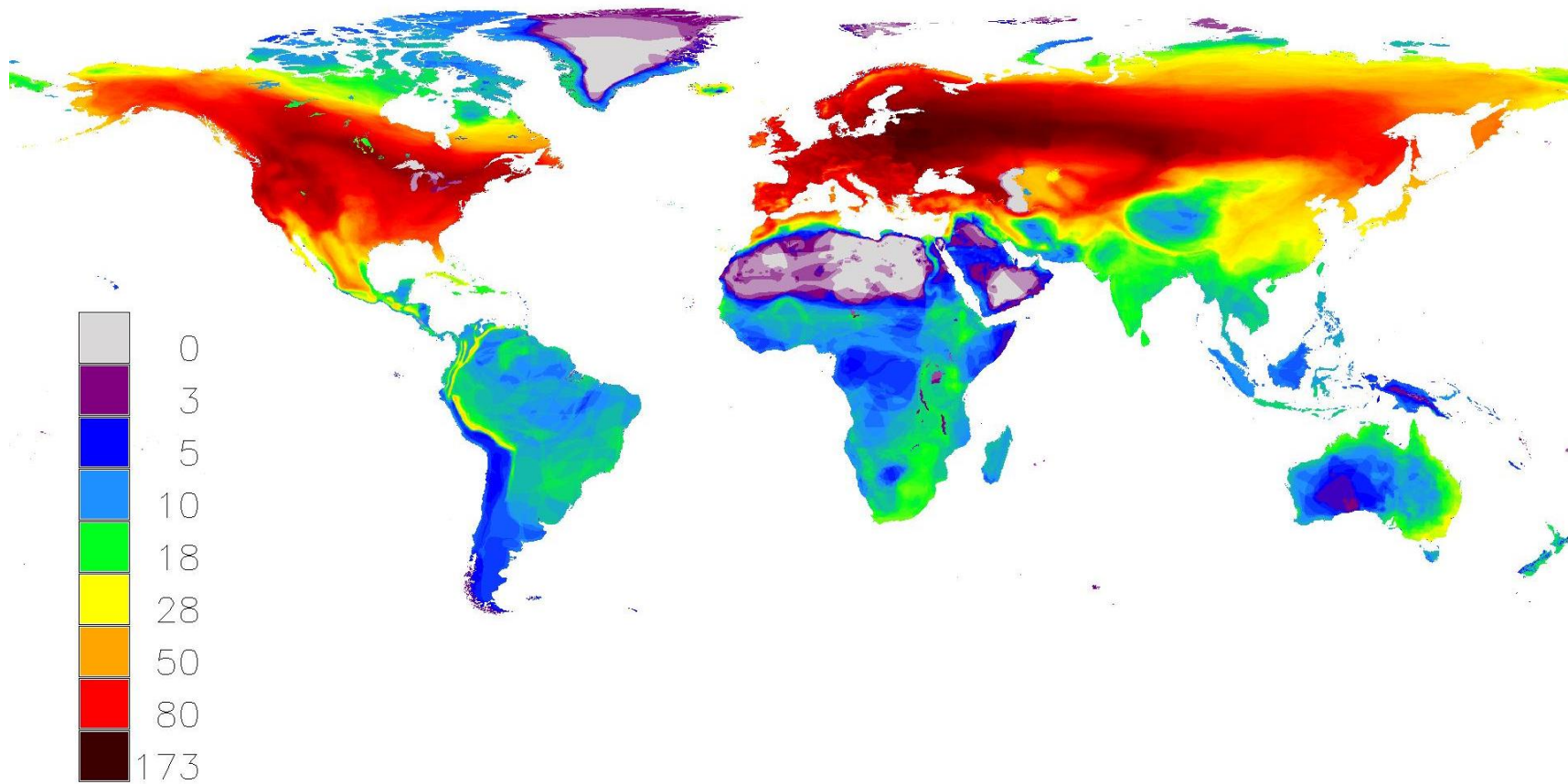


201 **Supplementary Figure 2 | Richness map of threatened mammals.**

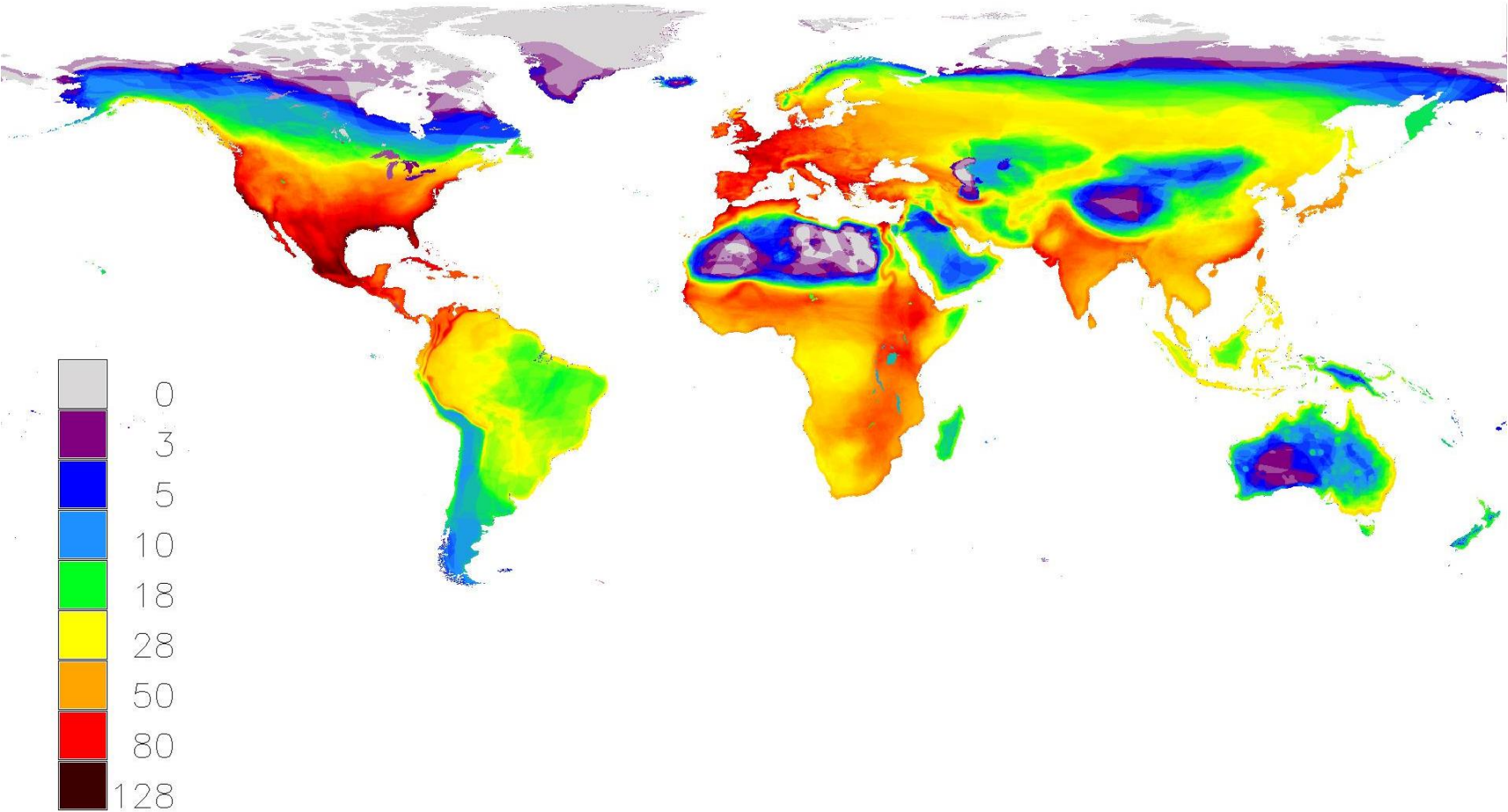


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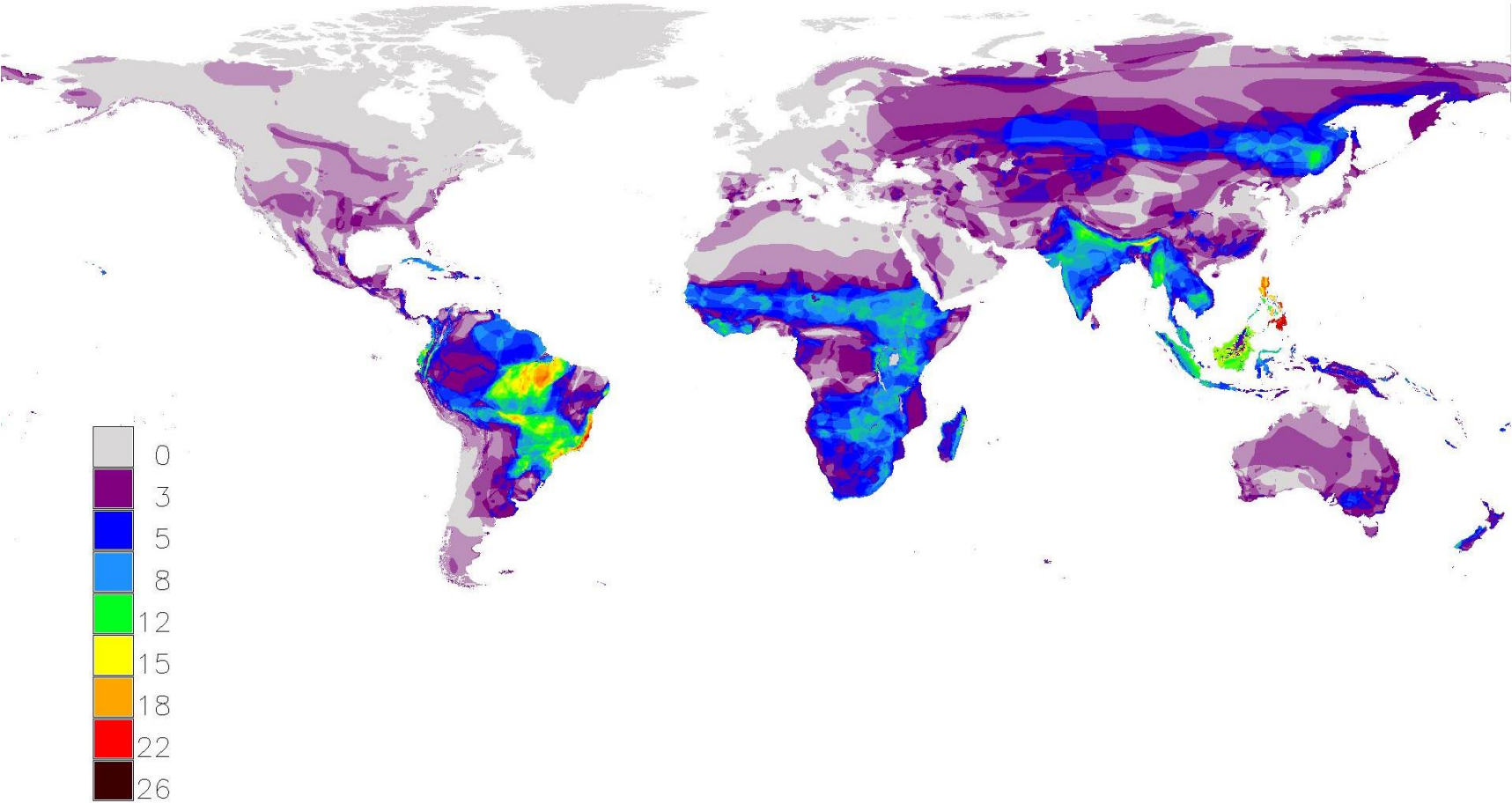
207 **Supplementary Figure 4 | Richness map in non-breeding ranges of migratory impacted birds.**



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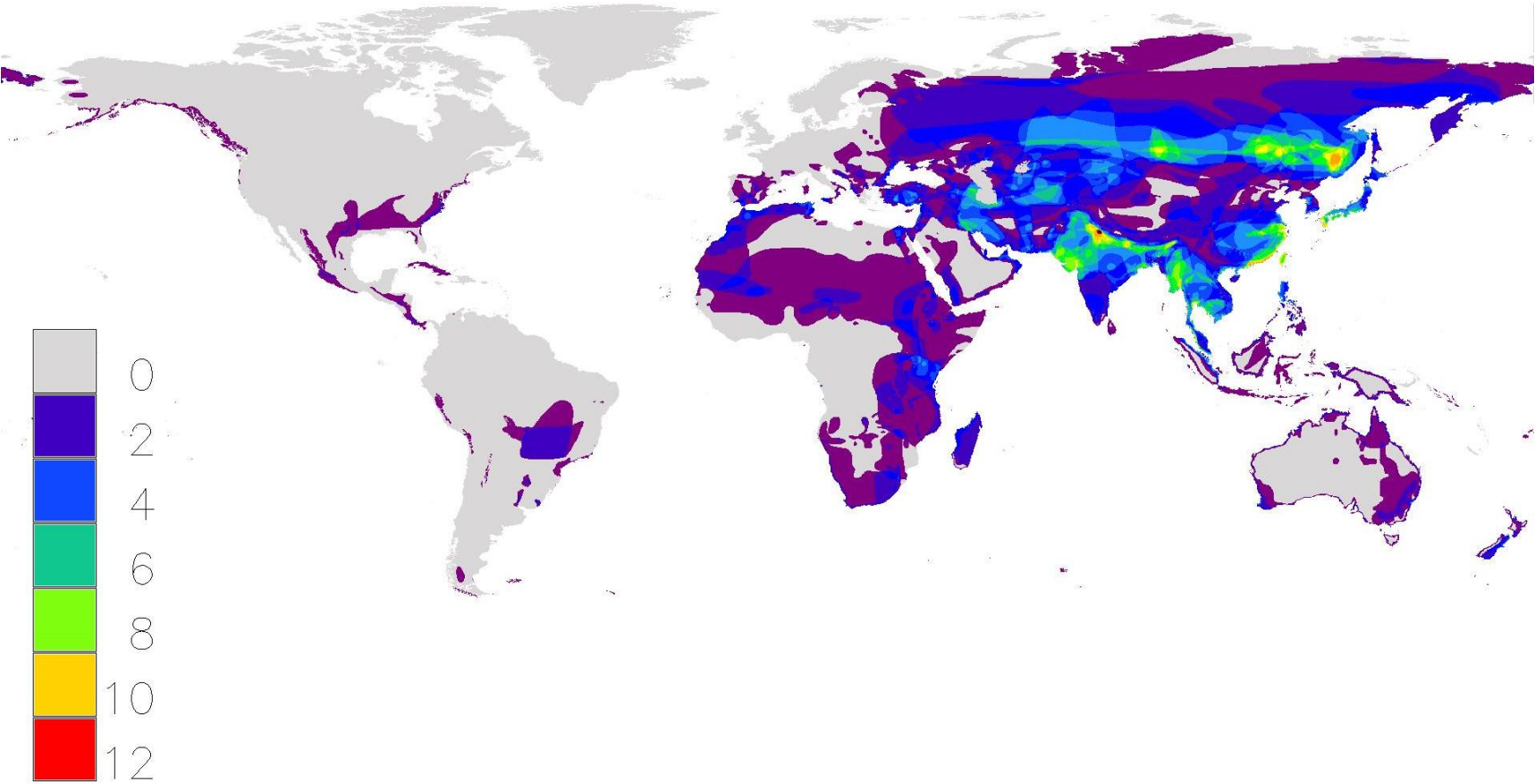
210 **Supplementary Figure 5 | Richness map in the breeding ranges of threatened birds.**



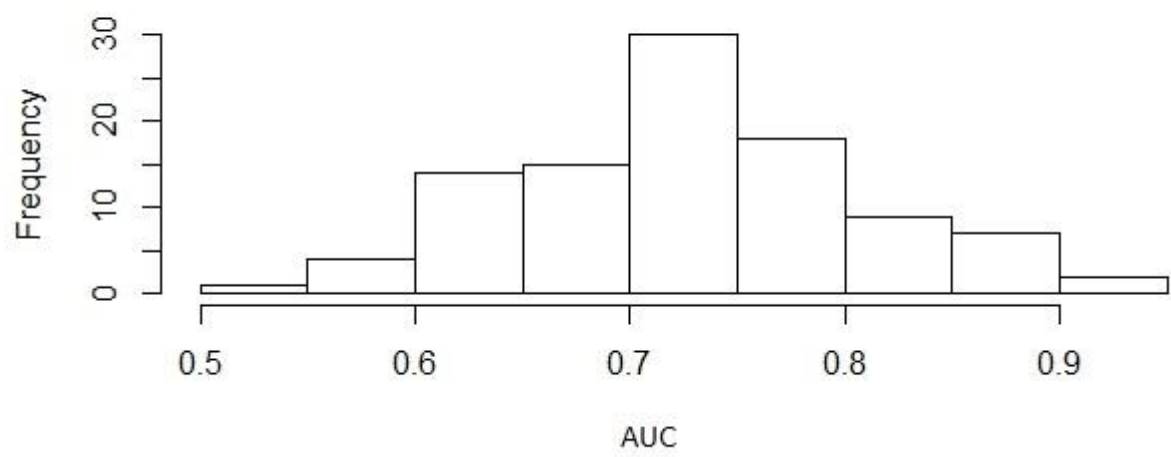
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213 **Supplementary Figure 6 | Richness map in non-breeding ranges of threatened migratory birds.**



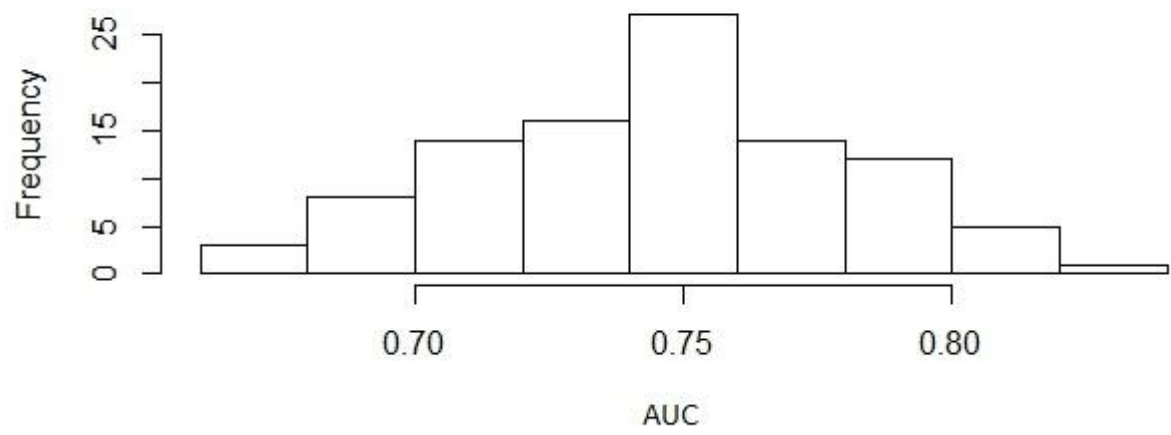
215 **Supplementary Figure 7 AUC values derived from crossed validation for mammals (mean AUC**
216 **value=0.73).**



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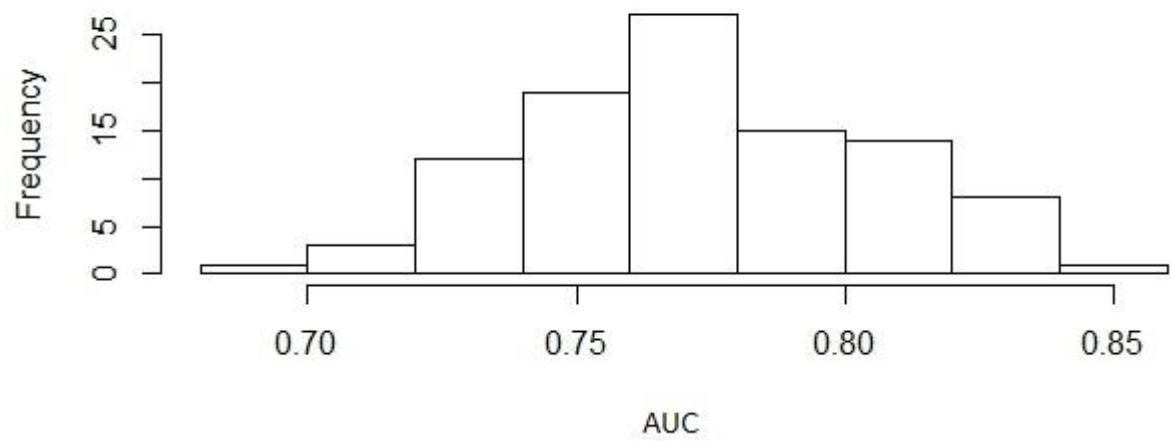
219 **Supplementary Figure 8 AUC values derived from crossed validation for birds in breeding areas**
220 **(mean AUC value=0.75).**



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223 **Supplementary Figure 9 AUC values derived from crossed validation for birds in non-breeding areas**
224 **(mean AUC value=0.77).**



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